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JULY/AUGUST 2017

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## PUBLISHER

Tall Timber Group  
www.talltimbergroup.com

## EDITOR

Jeff Burd  
412-366-1857  
jburd@talltimbergroup.com

## PRODUCTION

Carson Publishing, Inc.  
Kevin J. Gordon

## ART DIRECTOR/ GRAPHIC DESIGN

Carson Publishing, Inc.  
321Blink

## CONTRIBUTING PHOTOGRAPHY

Massery Photography  
NAIOP Pittsburgh  
Green Building Alliance  
Chapman Properties  
Poema Photography  
Tall Timber Group  
Master Builders' Association  
of Western PA

## ADVERTISING DIRECTOR

Karen Kukish  
412-837-6971  
kkukish@talltimbergroup.com

## MORE INFORMATION:

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## 7 REGIONAL MARKET UPDATE

## 11 MARKET METRICS

## 13 NATIONAL MARKET UPDATE

## 17 WHAT'S IT COST?

## 18 FEATURE Can We Make Things Here Again?

## 33 PROJECT PROFILE Norfolk Southern Rail Car Maintenance Facility

## 43 FIRM PROFILE McKamish Inc.

## 46 LEGAL PERSPECTIVE Navigating the Buy American Act

## 49 FINANCIAL PERSPECTIVE Surety Market Update

## 53 MBE/WBE SPOTLIGHT Advantus Engineering

## 57 TREND TO WATCH A Housing Shortage Looms

## 67 INDUSTRY & COMMUNITY NEWS

## 73 AWARDS & CONTRACTS

## 76 FACES & PLACES

## 80 CLOSING OUT Petra Mitchell, CEO Catalyst Connections



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# PUBLISHER'S NOTE

There are certainly a whole host of things to dislike about the current political climate. Regardless on which side of the aisle you sit, there isn't a whole lot being done and there's a whole lot of untruths being told.

One area that has been the subject of a whole lot of untruth is also the subject of the current *BreakingGround*. Manufacturing in the U.S. remains an important part of the economy and one that is in a state of flux. That can be very discomfoting for those who are victims of the flux. By the same token, change is the one constant in the economy and the manufacturing economy of the U.S. has always been very dynamic.

Pittsburgh is a great example of how that dynamism has played out over the last generation. Like the rest of the country Pittsburgh was impacted when U.S. heavy manufacturing became uncompetitive in the 1980s. Inefficiency and competition from around the globe forced manufacturers in the U.S. to adjust, although not without significant pain. Pittsburgh may have felt more than its fair share of that pain, especially since the steel industry, which was one of the heaviest hit, was headquartered here. But, as we all know, Pittsburgh recovered.

That recovery masks the fact that we still do make a lot of things here in Western Pennsylvania. It's true that the Pittsburgh economy has become something of a model of diversification but manufacturing is still an important part of that mix. It is exciting to see that some of the newer developments in Pittsburgh's economy - in particular the development of shale gas - seem likely to lead to even more manufacturing. The leaders in Pittsburgh like to hold this city up as a model for how an economy can be changed. We now need to think about what changes can be made so that Pittsburgh can be part of the next generation of manufacturing. And that involves looking forward not backward.

Heavy manufacturing in the U.S. is undergoing another unplanned transformation. The same shale gas exploration that has been a boon to Pittsburgh's economy has also been something of a stake in the heart for the coal industry. The steel industry has also seen a dramatic disruption because of the steelmaking capacity of emerging economies. But new industries are emerging and those companies need a skilled workforce.

In the feature article in this edition we will touch on some of the manufacturing opportunities that are emerging in Western Pennsylvania and in the rest of the country. You'll read about a number of the advantages Pittsburgh has for manufacturers - like our gas supply - as well as the conditions that make attracting companies difficult. One of the key factors that brings companies to Pittsburgh is its workforce. Like in almost every corner of the U.S., that skilled workforce is pretty thin in Western PA. And like in almost every corner of the U.S., the problem isn't the lack of available people but the lack of people with the right skills for the need.

This is where the politics get frustrating. The 2016 presidential election was unorthodox in nearly every way but one of the

crazier things that happened was that a Republican candidate swung enough working-class voters to his side by making unrealistic promises about bringing jobs back. That's normally the role the Democrats play! What neither candidate did, of course, was talk frankly to those same voters about reality. Talking about bringing these jobs back may generate votes for a candidate but there is little that can be done that will generate those jobs. The reality is that few of the jobs in the mines and mills are coming back. Those voters need different skills and training to meet the new needs of industry. What the politicians should have talked about was how their administration was going to help the workers get those new skills.

More than 12 million people are still employed in manufacturing in the U.S. That's down seven million jobs from the peak in 1980 but still a major piece of the employment pie. More importantly, though, job growth in other sectors has outpaced manufacturing. As of April 2017, a record six million job openings existed, which equals four percent of the total employment. Nearly as many openings existed as there were unemployed people.

Matching skills to demand is the key to meeting the growing shortage of workers and the gap in working class employment. There is a great opportunity to train those in underserved communities in these needed skills, which would relieve some of the inequity in the economy while reducing the burden on government support of those communities. On June 16, President Trump signed an executive order on apprenticeship that was primarily symbolic but which provided an increased amount of funding and increased flexibility for third parties - like trade associations and unions - to receive help with apprenticeship.

The dwindling labor supply is a problem for business but it represents an opportunity to rebuild the middle class, which has been buffeted by change for a generation. I grew up at a time when the path to success went through college. Now the recipe for success includes more specific skills and requires upgrading those skills over a lifetime. That's also the recipe for maintaining a successful construction career.

Success in the construction industry requires both a commitment to ongoing skills training and a willingness to adapt to a changing environment. For the workers hoping to regain their jobs in heavy manufacturing the environment has changed, probably for good. It would be great if politicians would stop seeing these workers as game pieces in an election strategy and show leadership that would help the unemployed and the employer at the same time. I confess I'm not pinning my hopes on that. The construction industry in Pittsburgh has been through wrenching changes and has adapted well. There is work coming that will require workers who aren't here yet. Perhaps we can be the ones who lead and show Washington how to do it. It wouldn't be the first time.



Jeff Burd



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# REGIONAL MARKET UPDATE



**E**conomic news about metropolitan Pittsburgh remains very steady as the second quarter ends. That is both good news and bad news.

The bad news is that job creation in the region stuck at levels that are well below the benchmark cities for Pittsburgh. In May jobs grew by 0.6 percent, with the unemployment rate unchanged at 5.3 percent. The job creation rate is below the forecast for 2017, although it is expected that growth would pick up as the year continues. As has been the case for several years, the manufacturing and mining/logging (which includes gas exploration) sectors saw job losses while information technology and hospitality continue to grow. Anticipated job growth in the energy sector, in particular from the reemerging natural gas industry, has not yet shown up in the data.

The good news in the data is that certain positive trends are continuing. One is the accelerating growth of new jobs in science related fields. CBRE noted in its Pittsburgh office market update that the rate of job creation in science related jobs in Pittsburgh was far outpacing that on the rest of the country. This is the payoff for the technology transfer from Pittsburgh universities in information technology, life sciences and robotics.

In more subjective good news, Pittsburgh recently received positive rankings as an attractive city for younger adults. Both Forbes and Urban Land Institute gave Pittsburgh high marks for the employment opportunities and amenities that young professionals are looking for, including the affordability of its lifestyle.

Perhaps the best news for the local construction economy

is the heightened activity in the two sectors, healthcare and higher education, that have helped drive the economy over the past decade.

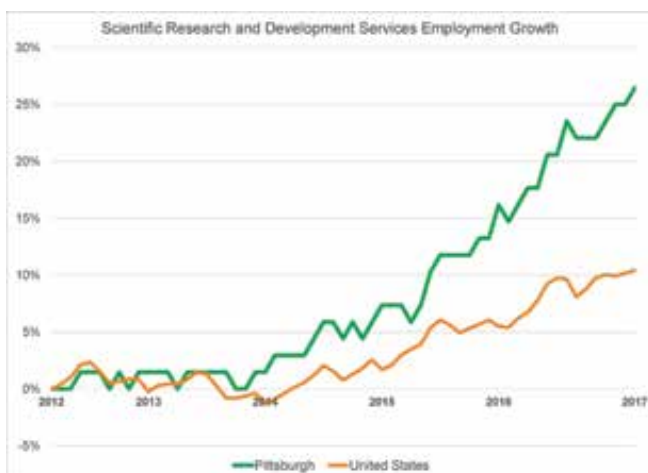
In the higher education segment much of the activity has been in planning and preparation. Other than ongoing construction at the Tepper quadrangle, the focus at Carnegie Mellon has been preparing to get construction started on two of its newest technology-related buildings. The 40,000 square foot Tata Consulting Services building, to be built by Mascaro Construction, and the ANSYS building, to be built by Mosites Construction, represent more of the technology transfer and commercialization of Carnegie Mellon research.

The University of Pittsburgh is completing its institutional master plan, which should kick off a period of increased capital spending. Pitt has been very active in putting small projects out to bid this spring but major project spending on campus is confined to the work that the Department of General Services has delegated to the university. The updated master plan should lay out new major capital projects later this summer but the first of those to advance should be the new 350,000 square foot building planned for the Syria Mosque site.

In the healthcare sector, however, there has been more activity. Within the past two months St Clair Hospital chose PJ Dick for its \$80 million expansion. Allegheny Health Network announced a significant investment in its Cancer Institute, including a new 59,500 square foot academic building on the Allegheny General Hospital campus. The health system expects to invest about \$150 million in expanding its cancer treatment network into suburban locations outside its hospitals and to upgrade the existing cancer treatment centers within its hospitals.

The region's largest health care system, UPMC, was also very active. In Erie, UPMC is in the midst of doing preliminary work to prepare for its \$111 million patient tower at the Hamot Hospital campus. UPMC chose Turner Construction as construction manager for the new tower. UPMC also moved forward on its \$100-plus million hospital in South Fayette Township and chose the design team for its \$200 million Ophthalmology Center in the lower Hill. Over the next three years UPMC will spend nearly \$1 billion in new construction and upgrading its facilities outside its Oakland main campus.

Almost all of these investments by the various providers are part of a strategy that moves healthcare services closer to where the patients live.



Growth in Pittsburgh's science R & D sector has been two-and-a-half times the U.S. average since 2014. Source: CBRE Econometrics.





*Gas processing plants compressor stations – like these two adjacent to Quiksilver Golf Club – have been part of a significant capital investment in the western Washington County area adjacent to the Ohio border.*

What may be the defining characteristic of the construction market for 2017 is the disconnection between sales and construction put in place. This year and 2018 are going to be years when a lot of the construction projects that failed to advance during the past few years, which is providing revenue to contracting teams that have been in place for an extended time. It's apparent through the first six months of the year that construction volume will outpace bidding and sales by some margin. That should change in the second half of the year, provided that the uncertainty at the national and global level doesn't make owners more skittish again. Much of the long-term potential that has been ballyhooed in Pittsburgh over the past few years should become reality during the second half of 2017 and into 2018, bringing more bidding and sales opportunities.

Public construction remains slow on the building side and competitive on the heavy and highway side. After an unusually active 2015-2016, the wastewater treatment segment of the heavy market has slowed. For horizontal construction, the benefits of Act 89 are being felt in the steady bidding volume by PennDOT and the Turnpike Commission but the volume isn't sufficient to ease the tight bidding conditions. With little hope of a promised infrastructure program coming from the federal government, contractors must look to 2018 for improvement.

Pennsylvania's budget shortfall is keeping capital spending low but several major projects have come out to bid. The first phase of Pitt's Hillman Library modernization, which should run between \$15 million and \$20 million, bid in June. The \$20 million Miller Auditorium at Slippery Rock University will bid in early August. At the federal level, the Department of General Services is taking proposals on an extensive

renovation of the Joseph F. Weis Jr. Courthouse Downtown and the Corps of Engineers is taking two-step proposals on the \$99 million, multi-project C-17 Beddown program at the 911th Airlift Wing.

The K-12 market received some bad news from the Pennsylvania legislature. The report by the PlanCon Advisory Committee, which was to be delivered to Gov. Wolf by May 15, was not completed on time and has been extended until mid-September. The moratorium on PlanCon review, which was set to expire June 30, has now been extended another full year. The legislative inaction means that school districts that did not have projects in the PlanCon pipeline cannot move forward for another year.

Bidding on the projects that were in the pipeline prior to the moratorium continues to be competitive. Bids were taken in May on the \$15 million Todd Lane Elementary in Center Valley School District and the \$12 million Canon McMillan High School. Both came in under budget, as did several smaller projects over \$1 million.

The steady uptick in demand for natural gas appears to be having an impact on the price of the commodity, especially in Western Pennsylvania. Part of the problem for producers in the Marcellus and Utica formations since the price dropped in 2014 has been the excess capacity from high producing gas wells. Producers were left to either burn off gas or sell it at a greatly reduced price to the spot market. Since the beginning of this year the price for gas sold in Western Pennsylvania has approached that of the Henry Hub price, making gas production in the Marcellus more profitable.

Evidence of the better business conditions in the gas industry are seen in the merger and acquisition activity and in the

increased activity in drilling and midstream development. The latter is driving construction of nearly a dozen compressor stations and two new gas processing plants since mid-2016. The new plants add 600 million cubic feet (MCF) per day of processing capacity (on top of the additional 200 MCF MarkWest added in its Houston plant last year), boosting the amount of ethane that can be isolated from the wet gas of the Marcellus and Utica. The proximity to the Ohio border, where the Utica exploration is growing, makes this part of Washington County a new hub for collecting and processing natural gas moving from Ohio and Pennsylvania before distributing it to the Gulf, the pipelines north and east, or to Monaca.

Since the beginning of 2016, midstream companies have invested nearly \$2 billion in this relatively small area.

Preliminary research on the non-residential/commercial construction market in the seven-county metropolitan area for the first six months of 2017 showed \$1.93 billion in contracting or starts. That's 15 percent lower than the first six months of 2016 but there are two reasons not to be concerned by the year-over-year decline. First, the 2017 is more than 40 percent higher than the average volume for the first six months of 2012-2015. Second, the 2016 volume included \$580 million for the Tenaska power plant in Westmoreland County, which spiked the total.

Pittsburgh's housing market also had a solid first six months, with the total housing permits rising 11.5 percent from the same period in 2016 to 2,098 units. Permits were issued for 990 single-family detached and 391 single-family attached homes. There were 717 units of apartments started during the January-to-June period. Development activity for subdivisions in 2016 have set the stage for more available lots during the remainder of 2017, creating optimism that new construction of single-family homes could accelerate during the third and fourth quarters. A return to the 2,500-unit level seems unlikely but a forecast of 2,200 new single-family detached homes is achievable. **BG**



The start of construction on projects previously in the pipeline will add to the activity at Shell's Franklin project to push non-residential construction near \$5 billion in 2017. Housing overall will cool slightly as apartment construction slows.



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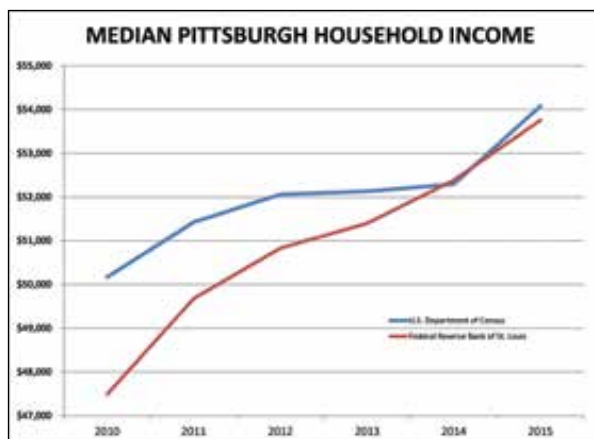
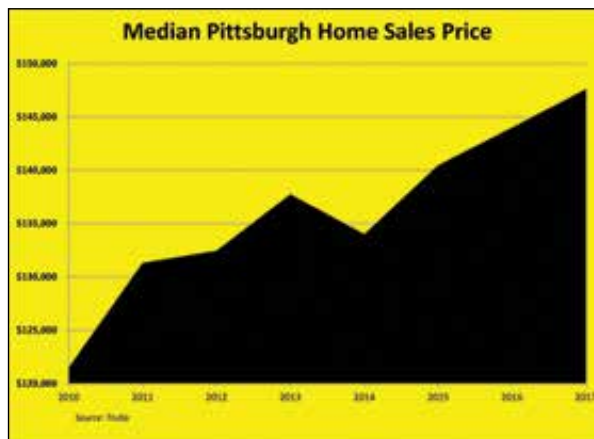
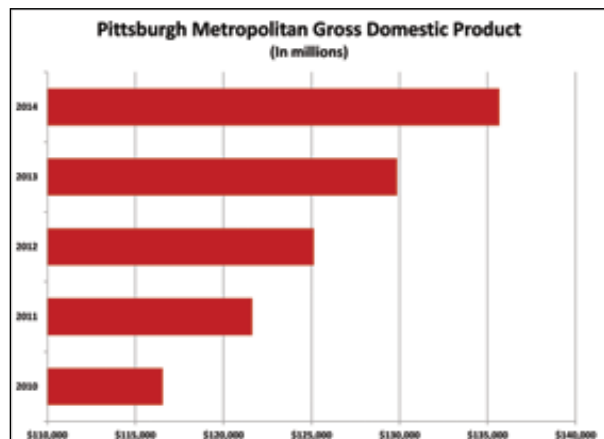
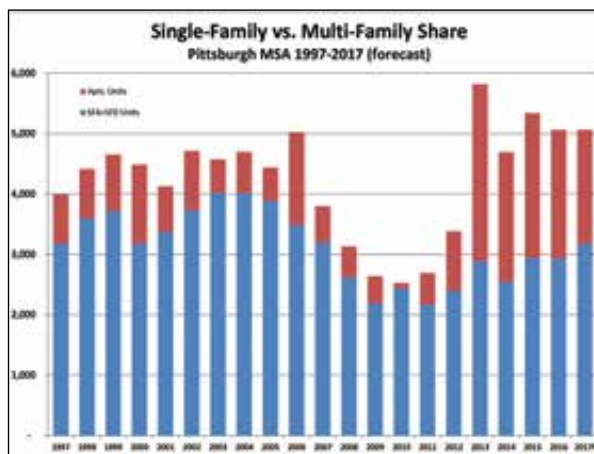
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# MARKET METRICS

BENCHMARK	Jan-June 2016	Jan-June 2017f
Total SFD units	959	990
Total SFA/Multi-unit	923	1,108
Total residential \$\$	\$412.1 million	\$501.2 million
Total non-residential \$\$	\$2.28 billion	\$1.93 billion
K-12 Additions/renovations	\$251.6 million	\$144.8 million
Healthcare construction	\$208.4 million	\$58.4 million
Hotel construction	\$83.3 million	\$57.7 million
Industrial construction	\$49.1 million	\$546.7 million
Office construction	\$660.9 million	\$295.1 million
Higher education	\$125.2 million	\$69.7 million



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# NATIONAL MARKET UPDATE

**D**ata on the construction economy and the U.S. economy in general in May and June are reflecting markets that are being constrained by short supply. Slowdowns in a number of the economic indicators are piling up but the explanation is not necessarily bad news.

From among these indicators, one that is consistently positive has been the first-time unemployment filings. The June 15 initial unemployment claims report showed 237,000 people newly looking for work. That moved the four-week moving average to 242,000, the lowest since the early 1970s. As a share of the total civilian workforce, the 237,000 new claims were 1.5 percent of the total, the lowest reading ever. On the face of it, this is good news but the underlying reason behind the low claims number is also a reflection of the inability of employers to find workers.

Tight workforce availability is part of the reason that housing starts also fell again in May. The June 16 report from the Commerce Department saw starts decline 5.5 percent from April to an annual level of 1,092,000 units. Builders complained that short supply of workers was constraining their ability to take on more homes. The May decline marked the third consecutive month of declining starts, although the year-over-year activity was up 3.2 percent, with building permits up 5.5 percent. The stronger permits volume suggests that activity will pick up through the summer, if sufficient workers can be found.

Homebuilder confidence also dipped slightly in May, albeit at record high levels. The culprit for the sagging sentiment was a shortage of lots and land to develop, which is also partially responsible for the decline in starts over the past 90 days. This trend is becoming more worrisome as the demand from first-time buyers heats up. These younger buyers, the Millennial generation, have rented longer and at a higher rate than previous generations. Since late 2016, Millennial

demand for home ownership has been demonstrated by a marked increase in mortgages granted to first-time buyers, now nearly 40 percent of the mortgages.

The final metric to be adversely affected by tight supply is job creation. Employers added only 138,000 new jobs in May, dragging the monthly average for the year down to 162,000. That's well below the 187,000 jobs added each month on average in 2016 but even with hiring slowing, the unemployment rate declined again to 4.3 percent. Here again, the deeper analysis of the hiring situation reveals that it is the lack of qualified applicants that is limiting the expansion of employment as much as any drop in confidence by employers.

An analysis of the May employment data by Ken Simonson, chief economist for the Associated General Contractors of America (AGC), revealed that the construction industry is feeling the pinch of workforce shortage.

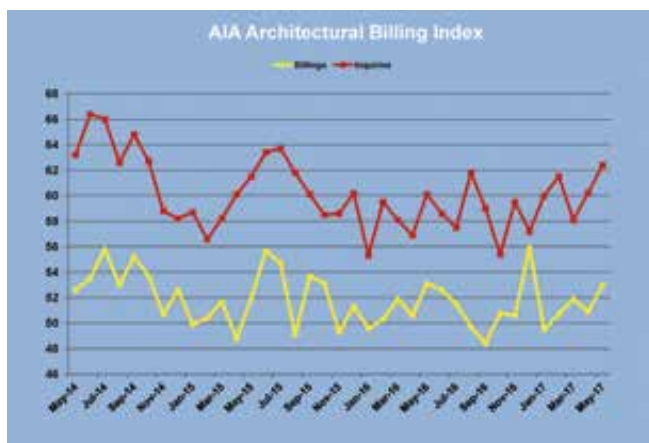
"Construction firms continued adding new jobs at a faster rate than the broader economy during the past year as demand for their services remains strong," says Simonson. "Even so, they had to keep employees on the job for more hours because they could not find enough qualified people to hire."

Construction employment showed an increase of 191,000 or 2.9 percent from a year ago. The year-over-year growth rate was almost double the 1.6 percent rise in total nonfarm payroll employment, Simonson noted. The sector's unemployment rate in May was 5.3 percent, up slightly from 5.2 percent a year ago but one of the lowest May levels in decades.

Simonson noted that average weekly hours in construction rose to 39.9, the highest May figure since the series began in 2006. Average hourly earnings in the industry climbed to \$28.55, an increase of 2.2 percent from a year earlier. Construction pays nearly nine percent more per hour than the \$26.22 average nonfarm private sector job in the U.S.

Construction activity declined 1.4 percent in April compared to March, according to the latest report by the Census Bureau. Spending in May was \$1.23 trillion, seasonally adjusted, a level that was nonetheless 6.1 percent higher than the January-through-May period of 2016.

Worth noting in the April report were significant increases in spending on commercial construction (up 15.2 percent), private residential projects (up 12.4 percent), and offices (up 16.9 percent). Non-residential construction rose 5.3 percent overall. Big declines were seen in manufacturing projects (declining 7.8 percent), public construction (down 5.2 percent), sewage and wastewater construction (falling 23.5 percent) and water supply and treatment projects (down 10.9 percent). The AGC was among several associations





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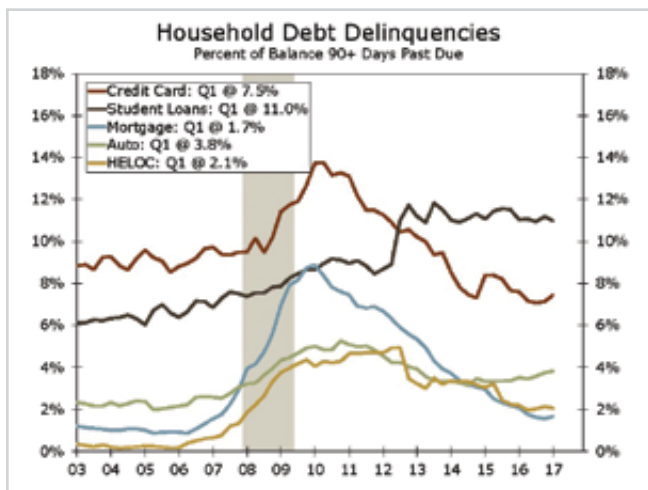
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Significant increases in delinquency for student and auto loans have been offset by steep declines in credit card and mortgage loan delinquency.

raising concerns about the lack of infrastructure spending, citing concerns for the construction industry in 2017 and the long-term negative economic impact from crumbling roads, bridges, treatment plants and locks/dams.

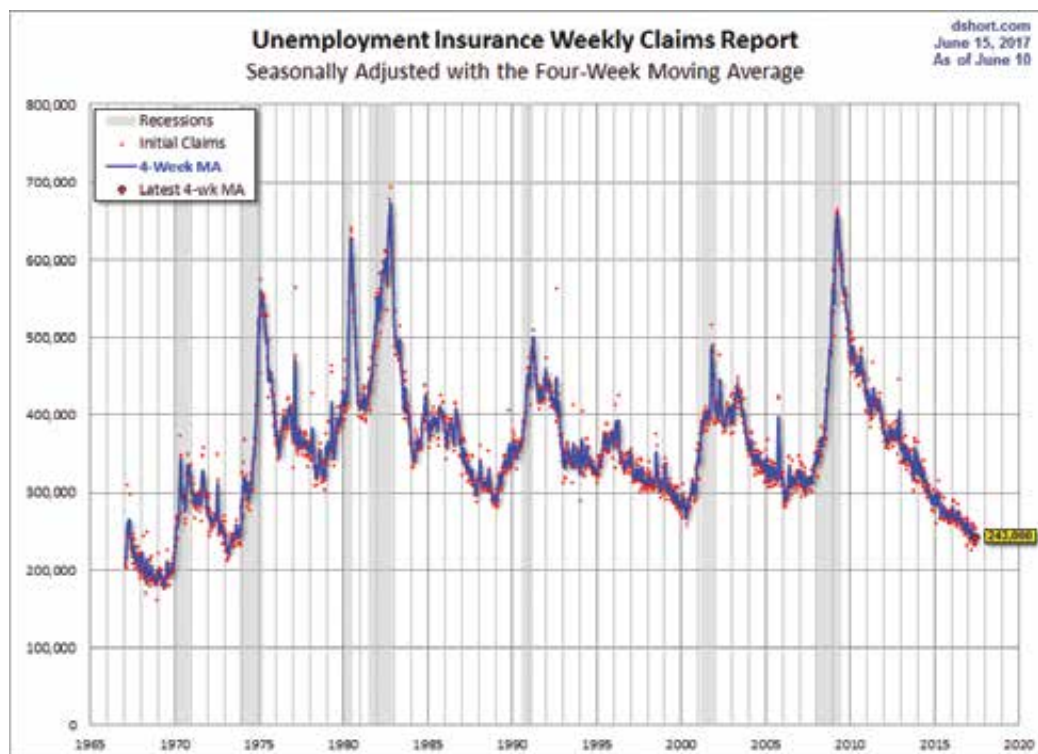
For now, however, the key player in the U.S. economy, the consumer, remains confident about the outlook. Making up more than two-thirds of gross domestic product (GDP), consumer spending continued to grow in May, although not as rapidly as in previous quarters. During the past couple of months consumer confidence has continued to measure high levels but spending has moderated. This seems to be an indication that the average consumer is feeling less certainty about some of the stimulating measures promised by the Trump Administration that haven't been delivered yet. There are also indications that the chaotic environment in Washington, DC is cooling consumer sentiment.

Sentiment aside, consumer balance sheets continue to improve. Home prices are rising (at a clip that has been above five percent this year). Unemployment is low, although wages have not yet responded to the tight labor supply as much as expected, growing at a 2.5 percent annual rate. The personal savings rate is at 5.3 percent, about double the rate of ten years ago and consistent with the 25-year average. Americans are beginning to fall

behind more often on student loans and auto loans, although delinquency rates for home mortgages and credit cards have fallen. The increase in delinquency in student and auto loans is thus far attributable to the marked increase in the number of both types of loans.

There is little evidence beyond anecdotes about the impact of the higher student debt but the dramatic increase in education loans coincided with the education of the Millennials, a group that is just beginning to make its mark on the economy. Over the coming five-to-ten years, if there is to be a negative impact of higher student debt it will show up in lower rates of home ownership, lower consumer spending and increased defaults on all types of loans.

Strength in the labor markets and steady low inflation gave the Federal Reserve Bank the confidence to raise interest rates by 25 basis points (one quarter percent) on June 14, a move that the Fed had signaled for months. Inflation, which began to climb steadily during the second half of 2016, has again cooled. This is somewhat unexpected, particularly in light of the tight supply for labor and housing, both of which have historically heated up inflation. The core personal consumption expenditures (PCE) deflator – which is a key indicator for the Fed – was up only 1.5 percent year-over-year in April and the Consumer Price Index (CPI) rose 1.9 percent over the same period. The latter index had been higher in January but has since receded. **BG**







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# WHAT'S IT COST?

**M**anufacturers that saw winter and early spring price increases have begun to see push back from the markets, bringing a halt to the steady rise in construction materials; however, most inputs to construction remain elevated – some significantly – above the May/June 2016 levels. The average year-over-year increase for inputs to construction is 6.8 percent.

The finished cost of construction lags that trend significantly. Prices for final demand in construction was one percent higher than in May 2016 and segmentation of the building types involved in the construction market shows that prices have increased by between 0.2 percent for hospitals and 2.0 percent for warehouses. A look at labor components finds a range of -0.2 percent for electrical contractor costs to 3.3 percent for concrete contractors. Wages and benefits were up 2.5 percent year-over-year, suggesting that the spread between final demand inflation and the subcomponents of the construction industry is a function of more or less profit.

For owners of buildings, the good news is that the trend since the late spring is for a slowdown in construction cost inflation. Several research groups that study construction inflation find in their May/June surveys that manufacturers are continuing to push for mid-single-digit increases for June and July orders but the market does not expect those increases to stick, at least not entirely. Among distributors announcing increases in Thompson Research Group's survey were hot-rolled coil (ten percent); wallboard (seven percent); insulation (seven-to-eight percent); ceilings (ten percent); architectural products (eight percent); and polyolefin sheeting (seven percent). Purchasing agents responded that they expected a 75 percent chance of the increases sticking in part, with most expecting flat pricing through the summer.

IHS Markit and the Procurement Executives Group (PEG) index for May fell from the near record high of April but remained elevated at 55.2. Seven of the 12 categories tracked in the materials sub-index showed rising prices; five categories registered flat pricing. The IPEG index respondents made note of the pullback in industrial metals following an extended period of inflation and called out the risk of the full implementation of the proposed "Buy American" rules for the major pipeline projects. Buyers were wary that such a proposal would create steel shortages and allocations, which would negatively impact both costs and schedules for construction.

The Bureau of Labor Statistics' (BLS) June 14 report on May inflation showed that price increases for consumers and producers were slowing but were close to the Federal Reserve Bank's two percent annual target. Consumer prices (CPI)

rose 1.9 percent compared to May 2016, while the producer price index (PPI) for final demand was up 2.4 percent. PPI for final demand increased only 0.1 percent from April however.

The Associated General Contractors' (AGC) analysis of the BLS report found that prices for inputs and labor were running ahead of prices for structures. PPIs for inputs to seven types of new nonresidential structures had year-over-year increases ranging from 2.7 percent for industrial structures to 4.1 percent for power and communications structures. PPIs for inputs to new residential structures rose 3.4 percent for both single- and multi-family housing. AGC noted that inputs for final demand construction "increased 3.2 percent year-over-year, outpacing the increases in the PPIs for finished nonresidential buildings and implying a squeeze on profits unless contractors can pass on cost increases or improve productivity." **BG**

PERCENTAGE CHANGES IN COSTS		May 2017 compared to		
		1 mo.	3 mo.	1 yr.
<b>Consumer, Producer &amp; Construction Prices</b>				
Consumer price index (CPI-U)		0.1	0.5	1.9
Producer price index (PPI) for final demand		0.1	0.7	2.4
PPI for final demand construction		0.1	0.7	1.0
<b>Costs by Construction Types/Subcontractors</b>				
New warehouse construction		0.1	0.9	2.0
New school construction		0.2	0.5	0.5
New office construction		(0.1)	0.8	1.6
New industrial building construction		0.1	0.8	1.1
New health care building construction		0.3	0.7	0.2
Concrete contractors, nonresidential		0.4	0.5	3.3
Roofing contractors, nonresidential		0.1	0.2	2.0
Electrical contractors, nonresidential		0.2	0.2	(0.3)
Plumbing contractors, nonresidential		(0.1)	1.1	0.2
Construction wages and benefits		N/A	0.6	2.5
Architectural services		0.1	0.4	1.1
<b>Costs for Specific Construction Inputs</b>				
#2 diesel fuel		8.1	9.0	23.3
Asphalt paving mixtures and blocks		(0.6)	(4.9)	(0.1)
Cement		3.2	3.7	7.1
Concrete products		(0.4)	1.0	2.7
Brick and structural clay tile		0.4	1.1	1.1
Plastic construction products		0.2	0.7	2.1
Flat glass		(0.2)	(0.2)	0.6
Gypsum products		(0.6)	2.6	7.4
Lumber and plywood		1.7	4.8	7.7
Architectural coatings		0.1	0.1	(0.2)
Steel mill products		1.1	5.0	13.8
Copper and brass mill shapes		(3.2)	(6.2)	13.8
Aluminum mill shapes		(0.0)	3.1	10.2
Fabricated structural metal		3.5	3.7	3.3
Iron and steel scrap		(2.3)	(1.1)	9.8
Source: Bureau of Labor Statistics, Updated June 14, 2017				
Compiled by Ken Simonson, AGC Chief Economist				



America was the industrial powerhouse that rebuilt many of the war-ravaged cities that were destroyed during World War II. Pittsburgh was one of America's main industrial centers. That all changed in the late 1970s, as everything from cars and steel to small appliances and clothing began to be made cheaper overseas. The number of people involved in manufacturing declined by seven million during the past 35 years. A bedrock segment of the U.S. economy was shaken.





An aerial photograph of a large-scale industrial construction project. In the foreground, there are extensive areas of cleared land, dirt roads, and some early-stage building foundations. A river flows through the middle ground, with a long bridge spanning it. The background shows a densely populated suburban or urban area with many houses and trees. The sky is clear and blue.

# CAN WE MAKE THINGS HERE AGAIN?

*Shell's multi-billion dollar investment in chemical manufacturing is expected to deliver \$4 billion in economic impact and attract billions more in supply chain and related chemicals and plastics manufacturing.*



It's hard to imagine another city that felt that economic shakeup more than Pittsburgh. Roughly 100,000 people lost their jobs in the steel industry and perhaps another 300,000 related jobs went away. A generation of Pittsburghers – or so it seemed – left the region to find work elsewhere. In Pittsburgh, and throughout the U.S., major efforts were made to replace those lost manufacturing jobs. For the most part, within a decade, growth in high technology and financial services more than replaced the employment and exceeded the wages lost in the industrial decline of the early 1980s. A more diversified U.S. economy emerged and endured and recovered from major recessions in 1991, 2001 and 2008. More people are employed in the U.S. today than at any time in history, yet the pivotal factor in last year's presidential election may have been Donald Trump's ability to connect with working class voters who felt left out of the new economy and to convince them that he could bring back their jobs.

The 2016 election was not the first or only campaign in which this promise of a manufacturing rebirth resonated. For many Americans, this country won't return to greatness until it returns to its position of preeminence in making things.

Can American manufacturing thrive again? Does it matter if that never happens? There are a number of benefits of a manufacturing-based permanence in the economy. An asset-based company has opportunities to respond to markets. If acquired, an asset-based company is more likely to maintain its presence in a community, assuming the assets of the company aren't obsolete or redundant. Companies that have assets in a community tend to integrate into the community and give back. And manufacturers provide higher-paying jobs, giving communities with manufacturing economies better consumers and investors.

Time has proven that those qualities may not be as foundational as we once thought. For certain, the shifting economic winds have proven that manufacturers have no more or less permanence – regardless of how valuable the assets – than other businesses. Moreover, the high wages of manufacturing jobs have proven to be lower than those working in service businesses.

During the period of those manufacturing job losses there were 53 million jobs added in service industries. Many of these were

minimum-wage positions but 62 percent of the new service jobs, or 33 million positions, paid more than the manufacturing jobs. That's a net gain of 26 million higher-paying jobs.

An administration in Washington promises to bring manufacturing back to the U.S. A major petrochemical investment in Western PA promises to attract downstream investments from related manufacturers. How realistic are the promises of revitalized manufacturing? If manufacturing makes a comeback, what will it look like?

## WHAT'S AILING MANUFACTURING?

One challenge that Pittsburgh – or any region – will have to accept is the global manufacturing environment. Even in an environment of extended job creation, manufacturing employment remains a drag on the economy. Demand for goods around the world has been depressed for a decade, although that is changing in 2017. China, which once consumed U.S. goods voraciously, has seen its economic growth slow and demand for manufacturing with it. Add into that mix an unusually strong U.S. dollar to make American-made goods that much more expensive, and you have a tough environment for U.S. manufacturers.

Those challenging conditions are the same for manufacturers in Pittsburgh. Manufacturing in Western PA is still more heavily based in metals than other industries. Steel and other industrial metals have faced perhaps the most difficult conditions of any industry. Global demand for steel plummeted with the Great Recession and when demand returned, China was in the midst of building enormous capacity for steel manufacturing. Today, the excess capacity in China is ten times the total manufacturing capacity of the U.S. and Canada combined. China fostered the building of capacity in many industries that is now underutilized. It's easy to understand why manufacturers competing with Chinese companies don't expect to see profitable conditions soon.

There are positive signs for manufacturers since the end of 2015. Economic conditions began to improve in Europe and Asia in 2016, with the prospect of noticeable gross domestic product (GDP) in Europe forecast for 2017. Prices for basic and industrial metals have improved, an early "green shoot" that usually foretells better conditions. U.S. manufacturers have noticed the improvements.



*The Institute for Supply Management's monthly index has been significantly improved over the past 18 months.*

The Institute for Supply Management's (ISM) monthly index has seen a steady improvement since the end of 2015. Beginning in September 2016, the ISM index has been above 50, signaling the manufacturers are seeing growth. On June 1, ISM announced that the May 2017 index hit 54.9, up slightly from April. Within the details of the report were signs that the positive momentum will continue. Prices declined somewhat sharply in May, but the reading remained above 60. New orders for exports also slipped but were at 57.5, a positive imbalance of four points compared to imports. Those May readings marked 15 consecutive months above 50.

Manufacturing was globalized well before other sectors of the economy. The kinds of economic conditions that are hurting U.S. manufacturers today have been problems before. Japanese companies posed existential threats to U.S. industry 40 years ago and heavy industry in the U.S. was forced to restructure. Japan's middle class raised its standard of living – and wages –

*General Electric's \$32 million investment in advanced materials research resulted in a new building and a bridge to further investment.*



and manufacturing moved to Korea, until Korean middle-class standards improved. China is but the latest country to pose a manufacturing threat and odds are that its workers will expect their standard of living to improve. There are already signs that manufacturers are looking to other countries where the labor input is cheaper. It's worth remembering that the British once looked at America, and its cheap labor and resource, in the same way we view the Chinese.

The dollar has been both a boon and an obstacle to exports for stretches of time over the past 50 years. Most of the time, a weak dollar coincided with a weak economy, meaning that the more favorable exporting climate was small solace in the greater scheme of things. As the safest currency on the planet, the dollar has been the safe haven investment of choice for a decade. That isn't changing and rising interest rates will only strengthen the dollar. What would change the value of the dollar would be a dramatic change in the perception of the stability of the U.S. compared to the rest of the world. Here again, a weaker dollar could also mean a weaker U.S. economy.

These shifting market conditions are part of the reason U.S. manufacturing has waxed and waned. U.S. companies made the adjustments necessary to survive in changed markets or they failed, but employment ebbed and flowed as manufacturing fortunes declined or improved. What has occurred over the past decades has been a steady draining of U.S. manufacturing.

The causes of that draining are numerous but most stem from capacity that has failed to remain competitive. Many of the old in-

dustries in the U.S. have fought and lost battles to conditions that those industries couldn't control. The steel industry modernized but can't overcome the over-capacity of the Chinese steel industry. The garment industry fights labor costs that are unsustainable in the U.S. There are companies that make shirts in America but they charge \$100 for a dress shirt, a price that won't garner much market share. Where the U.S. has an opportunity to develop an industrial advantage again is in advanced manufacturing.

Automation isn't a new thing. The automotive industry has been remade by robots over the past generation. It's understandable that people would look to that example with fear. The auto industry employs fewer workers in the plant now than in 1975 but some 2.4 million people are still involved with automobile manufacturing in the U.S., a figure not far off the industry's heyday. Moreover, the decision to automate helped save the manufacturers and the plants that they own. Failure to automate would have ceded the competitive advantage to another company and cost the plant its existence.

"I keep reading these articles that say robots are coming to take your job. That's not necessarily true. I think artificial intelligence is going to take more jobs than robots are," says Jay Douglass, chief operating officer for the Advanced Robotics for Manufacturing (ARM) Institute, a Pittsburgh-based public/private collaboration founded by Carnegie Mellon University, that received a \$250 million federal grant to develop robotics for industry. "What we're focused on is restoring competitiveness in some manufacturing industries, which is only going to drive job growth."



Robots make the workplace safer, saving lives, lost time and billions in expenses for employers. Optimistic studies put the job creation factor at three new jobs for every job lost to automation. What the U.S. workforce hasn't been prepared for yet is what will be needed to do those new jobs.

"The problem with manufacturing right now is there are close to a million open jobs in manufacturing because there are not enough qualified workers out there," notes Douglass. "We're not just focused on the technology side; we're also focused on the workforce side. That's half of our mission. What are the right skill sets that people need to work in these factories? They're great jobs. They pay well but they require different skills. Manufacturing's not like it was 40 years ago. Back then you could walk out of high school, go to work and stay there forever. You can't do that now. Jobs change every five years. You need an approach of lifelong learning. You've got to evolve as the jobs evolve."

The key takeaway from any discussion about automation is that whatever economic growth follows will demand workers with new skills. As the displaced workers in industries like steel and coal are discovering, training for new jobs beats any government policy attempts to save old jobs.

## MAKING THINGS IN PENNSYLVANIA

For certain, Pennsylvania is among the states that were hardest hit when heavy manufacturing declined. For all of the exciting opportunities that may turn into new companies and new jobs in Pittsburgh, it's important to remember that the business climate in Pennsylvania is just as important as the business climate in Pittsburgh. At the moment there are things to be desired about Pennsylvania's business climate and a counterbalancing drawback for almost every one of them.

What Pennsylvania has always had to offer - great natural re-

sources, good proximity to markets and a great work ethic from its workers - are still the Commonwealth's best cards. There is a political climate, however, that has made it very difficult to promote the state and make the business environment friendlier without having a negative impact on Pennsylvania's aching budget. Like in many states, Pennsylvania's legislature is reluctant, if not downright opposed, to raising taxes to generate revenue. At the same time runaway pension obligations, increasing costs for government services and expanding government reach all have added to the expense side of the ledger. As the 2017-2018 budget negotiations wind down, there is a little room to wiggle in Pennsylvania's budget.

"Pennsylvania has a lower minimum wage and lower individual income tax rate than the surrounding states," notes David Fair, president and CEO of the SMC Business Councils. "On the other hand, Pennsylvania has a higher corporate tax rate. If we try to attract business by lowering the corporate tax rate the burden falls on the [individual] taxpayer. The question is whether or not you give away the farm now to do better later."

Corporate taxes and business taxes in general have been a concern for civic and economic development leaders for some time. One of those taxes, the corporate stock tax, is just now being phased out. But with a budget deficit that exceeds 1 billion dollars it will be difficult for legislators to cut revenue further. That leaves fewer tools in the toolbox for business attraction. That is a concern for business attraction professionals like David Ruppertsberger, president of the Pittsburgh Regional Alliance (PRA), who says the PRA has seen financial incentives creep back in as an important factor in site selection.

"We hadn't seen incentives that much in recent years but we are seeing it again," says Ruppertsberger. "We have lost one project because of incentives and probably another for which we are awaiting final word."



*The Mon River Industrial Park was a finalist for the PTT cracker site but requires millions in preparation to make the 190 acres south of Route 88 usable. Photo courtesy Newmark Grubb Knight Frank.*



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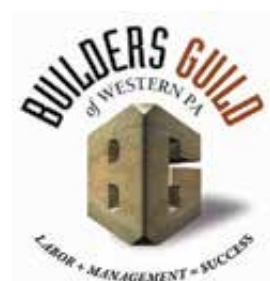
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*The nanotechnology research lab in the new Scott Hall at Carnegie Mellon University is one of three major maker spaces on campus. Photo by Green Building Alliance.*

The PRA annually surveys site selectors and businesses looking to locate here in order to find out what the top decision-making factors are. For several years incentives had fallen down the list, outside of the top five reasons that companies chose specific sites. This year incentives have come back up the list. According to Ruppertsberger, the top responses this year were: available sites, location relative to customers, financial incentives and right to work. The PRA has made good use of incentive programs over the years but Ruppertsberger isn't optimistic about the current environment.

"I fear the new budget is not going to be helpful," he says.

Legislators recently collaborated on a bipartisan pension reform bill that was a surprise accomplishment. That bill was a step in the right direction but it does not make a major dent in the current shortfall. For that there will have to be unpleasant cuts or other measures taken to generate revenue.

One proposal that seems to have no support among manufacturing advocates is the so-called Tech Tax.

Proposed in February to help balance the state's budget, Governor Wolf wants to impose a state sales tax on technology and computer services. Reminiscent of the 1991 tax that was repealed six years later, this new tech tax would apply to "... an array of technology services, including web hosting, applications software programming, software consulting, system design, hardware consulting and data processing. In Allegheny County, a one percent local sales tax would bring the total tax to seven percent" says Michael Carroll of Watchdog.org in his article "Technology industry: PA governor's proposed sales tax would cost jobs."

More than one technology executive warns that computer services are extremely mobile business activities and could easily relocate elsewhere. Neighboring states could become extremely

attractive. The tax is being opposed by advocates for technology and manufacturers.

"All this does is add an increased cost for manufacturers doing business in Pennsylvania when they consume new technology," observes Brian Kennedy, senior vice president, operations and strategic programs, for the Pittsburgh Technology Council. "Any kind of custom software you design or pay to design, which is currently exempt as services, will now be taxable. If you are doing a new website for \$100,000 and you're in Allegheny County, you will pay an extra \$7,000."

This isn't PA's first attempt at taxing technology. During the dot com era, PA sought to exploit the emerging companies' growth by instituting a similar tax. That levy had a dampening impact on new business startups and the tax was repealed in 1997. In recent years, similar taxes were passed in Massachusetts and Maryland. Both were repealed in short order. If passed, PA's tech tax would be one of four in the nation, joining Hawaii, South Dakota and Connecticut.

"It won't impact large companies. They will just move the work out of state," predicts Kennedy. "It really hits the smaller manufacturers, the family-owned business that works with local companies."

Gov. Wolf has tried a similar tactic with the oil and gas industry, looking to extract revenue from the companies extracting natural gas and oil in Pennsylvania. The extraction tax was understandably unpopular with the gas industry and, unfortunately, it has been proposed as the oil and gas industry were hard hit by plummeting prices and cut way back on extraction.

One measure that government can promote as being funded to aid business is infrastructure. Act 89 of 2013 levied a gasoline tax that has added billions to the Commonwealth's funding for highways and bridges. The escalating revenue plan reaches its maximum in 2018, when an additional \$3.5 billion will be available for infrastructure construction. Getting bridges and highways in good order plays another factor in attracting manufacturers.

"If we're going to build manufacturing in Pennsylvania, you have to be able to move goods across the country from here," asserts Fair.

Another area where the Commonwealth may be able to be more help is in workforce training. Although it may not have made the PRA's top four factors this year, an adequately skilled workforce could not have been far behind on the list. Ruppertsberger notes that workforce development has become something that other states are using as a financial incentive of sorts.

"The way many states are giving financial incentives is in the form of workforce training assistance," he explains. "More and more are taking the form of tax credits."

Tax credits, which were the primary incentive offered to Shell Chemicals, have favor among politicians because they don't hit the budget until there is income to tax. Current revenues don't take a hit and no out-of-pocket expenses are incurred. They don't have an impact unless the company receiving the tax credit locates in the state and makes money.

David Fair relates that his members, which are primarily small businesses, have more elementary workforce training needs.






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Brad Totten, Principal & Managing Director

"The big five are still that an employee can read, write, do math, pass a drug test and show up for work," he says. "A lot of times it's the last two that are the hard ones to find."

Gov. Wolf supports public-private collaborative like Manufacturing PA, which brings industry, academia and government to co-invest in the development of manufacturing technologies and capabilities to build economic sustainability in Pennsylvania.

"Programs such as Pennsylvania First, which assists job creators with any costs associated with their projects and includes the key WEDnetPA training program, is a tool that has enabled the commonwealth to more effectively compete for manufacturing as it builds bridges between public and private sectors," says Dennis Davin, secretary of the PA Department of Economic and Community Development. "In fiscal 2015-16, for example, PA First funding led to more than \$263 million in pledged private investment."

"The proposed Manufacturing PA initiative is another of Gov. Wolf's building blocks for economic success in Pennsylvania. If enacted in the 2017-2018 budget, Manufacturing PA would dedicate further resources to technical assistance and training-to-career programs for manufacturers."

Pennsylvania's leaders will have to take a clear-eyed look at how the Commonwealth stacks up on whatever incentives or decision-making factors can be influenced by government. Being adjacent to New York and New Jersey can give a false sense of Pennsylvania's business friendliness, especially when the neighbors to the west and south are opening their arms wide to the growing industrial companies. As Dan Borne, retired president of the Louisiana Chemical Association was heard to say at the recent Petrochemical Impact Forum in Titusville, "The cautionary tale is this: don't take the golden goose for granted. If you begin to sit on the golden goose, the goose will leave."

### MAKING THINGS IN PITTSBURGH

When the Northeast Petrochemical Construction Conference was held in Pittsburgh in mid-June, the newspapers were again flooded with stories about the Shell cracker plant and its economic impact. Like in the past, speakers touted the opportunities for the build-out of a new petrochemical industry center and the likelihood that the plastics industry would follow. But also like in the past, this year's conference was long on potential and short on details. What the conference did provide was a better look at what was going on in the petrochemical industry.

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One of the presenters, Martha Moore, senior director of policy and economics at the American Chemistry Council, told the conference there were \$185 billion in petrochemical projects planned or built since 2010 in the U.S. She estimated that was the equivalent of 40 percent of the replacement cost for the entire U.S. chemical infrastructure. Most of those projects were in the Gulf Coast region but it's an indication that the chemical industry sees sufficient upside in the market to reinvest in its capacity. That bodes well for future crackers and downstream development.

There are some scenarios for downstream manufacturing that are feasible. Within the plastics space there are compounders and converters – companies that take the polyethylene pellets and create shapes or add colors – that could be attracted to the region for the competitive logistical advantage. These companies sell plastic film, bars or sheets that manufacturers use to make the molded, extruded or blown finished plastic products. There are 8,147 converters or compounders within a 400-mile radius of Beaver County. That is a lot of prospects for expansion or relocation.

Likewise, there are opportunities for petrochemical manufacturers to either work with Shell to use its co-products or to take advantage of the scale of the demand Shell is creating for ethane to locate in the Marcellus footprint for cheap feedstock for different products than Shell will produce. There are more than 17,000 chemical companies located within that same 400 miles.

A third scenario exists whereby manufacturers that make things that are packaged or stored in plastic would choose to locate here so that they are that much closer to the plastics that are used to make their containers. About three hours southeast of Pittsburgh, a project very much like that gives a glimpse of what this kind of opportunity might create.

In Berkley County, WV Proctor & Gamble is building a new plant, called the Tabler Station plant, which will manufacture and distribute many of its health, beauty and cleaning products to customers in the Northeast and the Carolinas. The plant will cost between \$500 million and \$4 billion, depending on whose press release you're reading. Part of the communications problem is due to the secrecy on the site. The plant will serve multiple divisions of Proctor & Gamble that are not sharing their plans with one another. The plant will include multiple buildings, reported to total one million square feet under roof. Many of the contractors on site are from Pittsburgh and some quick math of the projects underway finds that somewhere near two million square feet have been started.



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And that doesn't include a large bottling facility that is being handled outside Proctor & Gamble's contracting team.

It's the latter building that offers a glimpse at plastics potential. Proctor & Gamble doesn't make plastic but most of its products come in plastic containers. Because of shipping considerations, the most efficient way to sell plastic containers to Proctor & Gamble is to locate a container manufacturing plant on the same site as Proctor & Gamble's facilities. It's true that a major chemical or plastics company looking to build new in the U.S. might choose to be near the new crackers but the critical mass for that industry is in Louisiana and Texas. Proctor & Gamble is building along I-81 in West Virginia because it wants to be close to a huge cohort of its customers. When you consider the spectrum of products that are contained in plastic, you can imagine other manufacturers wanting to be within 500 miles of 70 percent of the U.S. consumer market.

Presenters at the Northeast Petrochemical Construction Conference were also bullish about the prospects for additional crackers beyond the two announced by Shell and PTT. Echoing the IHS Markit study that concluded there was sufficient ethane in the Marcellus formation to justify four more crackers in Pennsylvania (or elsewhere), it was estimated at the conference that if chemical makers used just the excess ethane there would be enough for three more.

As they have on many occasions since the Monaca site was selected for the cracker, industry experts at the conference were emphatic that the development of the polyethylene facility was the beginning of the buildout of an industry. It will take four more years to see the plant operating and it will probably be another couple years before there are any announcements of downstream investments. In the meantime, there will be some amount of uncertainty that will accompany the excitement of the potential.

Pittsburgh's other manufacturing opportunities are equally uncertain in nature and equally exciting in their potential. While the oil and gas industry has made its living using the resources under the ground in Western Pennsylvania, emerging technology has prospered by using the human resources at Pittsburgh's universities, particularly Carnegie Mellon University.

Among the businesses making headlines, the companies in the automated vehicle space have proven to be the fastest-growing. The larger question remains as to whether these companies will ultimately build their products in Western Pennsylvania. The research and development being done at CMU in robotics and autonomous



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vehicles certainly gives Pittsburgh an edge at this stage of the industry's development and it will probably serve the region well for future research. But the finished product of the research is a vehicle and other cities are better equipped with both the manufacturing infrastructure or regional advantages that put Pittsburgh at a competitive disadvantage. These include places like Detroit where cars have been made for a century or Tennessee and South Carolina where car companies have come and setup manufacturing facilities over the past two decades because of the incentives and the right to work labor. It is enticing to consider whether a non-traditional car maker like Tesla, should they get into the automated vehicle manufacturing, would choose Pittsburgh as their manufacturing site; however, the lack of a car-making cluster would be a drawback for Tesla too.

The next best manufacturing opportunities will be the subcomponents of these vehicles. These would include the LIDAR systems, the processors and the controls that are the brains of the automated vehicle.

Autonomy is an industry that also extends into other types of vehicles, both on-road and in industrial applications. Moreover, robotics, which is really a different branch of the tree than autonomous vehicles, has many applications. Most of these are industrial and in fact the ARM Institute is devoted to advanced robotics in manufacturing applications. It is difficult to imagine where their research may lead and what breakthroughs may come with it. But the result of the work that ARM does will be manufacturing processes that can compete on a global scale and will create jobs that provide a better-than-average living. If you are struggling to grasp how applied robotics will create jobs, perhaps think of the software or circuit board industries 30 years ago. Suggesting that tens of millions of people would be employed in these businesses in 1980 would have seemed ludicrous, just as suggesting that a company that created an Internet search

algorithm would become the most valuable in the world; and yet both things are true.

The other branch of manufacturing that is experiencing a breakthrough and has a strong presence in Pittsburgh is that of advanced materials manufacturing, also known as 3D printing. In scarcely more than five years this technology has gone from a novelty that was capable of printing small plastic components to technology capable of producing incredibly complex shapes and structures out of virtually any material.

Progress in advanced materials manufacturing has already produced two significant construction projects. General Electric's 120,000 square foot additive manufacturing research facility was built and opened over a year ago in Chapman Westport. Under construction right now is the \$60 million investment in advanced materials research that Alcoa is making at their New Kensington plant.

As with many of these new technologies, research from Carnegie Mellon is at the center of the advanced materials development. There are three projects at Carnegie Mellon that are devoted to small-scale manufacturing known as maker space. The maker movement uses technology like modeling or simulation software to go straight from the PC to the shop floor. Groundbreaking research and nanotechnology are being tested every day at Scott Hall's ultra clean labs. A portion of Hamerschlag Hall has been renovated to create 13,000 square feet of maker space, which is intended to be a place where researchers of all types across CMU campus can come on an ad-hoc basis to test whether something they had modeled can be built. And one of CMU projects in planning, the ANSYS Building, is a 30,000 square foot maker space.

These spaces will allow very smart people to test fabrication of ideas that heretofore were only theories. Again, no one knows





what opportunities will result from this research but the intention is that these will be the small acorns from which mighty oaks of manufacturing will grow. Given what we've seen in the advance of technology and the remarkable talent that can be brought to bear at institutions like Carnegie Mellon and University of Pittsburgh, it's hard to bet against one or more of these becoming major breakthroughs and employers.

Whether the research is being done at the universities or buy a private public partnership like the ARM Institute results in a new manufacturing paradigm or just countless improvements to existing processes, the likelihood is that this research will create jobs. If we reflect on the pace of change over the past decade it's likely that this research will yield more jobs than we imagine and sooner than we predict.

It's also responsible to remember that technology and the advantages technology brings can be fleeting. The recent high-water mark in employment in Pittsburgh topped the previous highs of the mid-1990s, not the heyday of steel. It was the dot.com bubble that drove the last employment surge in Pittsburgh and when it popped, employment fell. Names like Lycos and FORE Systems were once darlings of that era and are now long forgotten. One has only to look back a few years for a current cautionary tale. Battery maker Aquion did not exist in 2010 and by 2015, occupied 330,000 square feet in RIDC Westmoreland. They attracted investors like Bill Gates. And yet they are now going through Chapter 11 bankruptcy. The market for newer and better battery storage has not gone

away but Aquion's travails underscore the reality that manufacturing is hard. It is capital intensive and it only takes a few mistakes to create dire financial problems.

But as Allegheny Conference CEO Dennis Yablonsky often reminds regional partners, these are growth problems. Whatever pains are experienced as these new manufacturing opportunities sort themselves out, they will be preferable to the pain of the early 1980s. Our political leaders promise that high-paying working-class jobs will return. In Pittsburgh, there seems to be an awareness that those jobs no longer exist. The future that is being imagined in Pittsburgh will require a different kind of working class and a different kind of prosperity. **BG**

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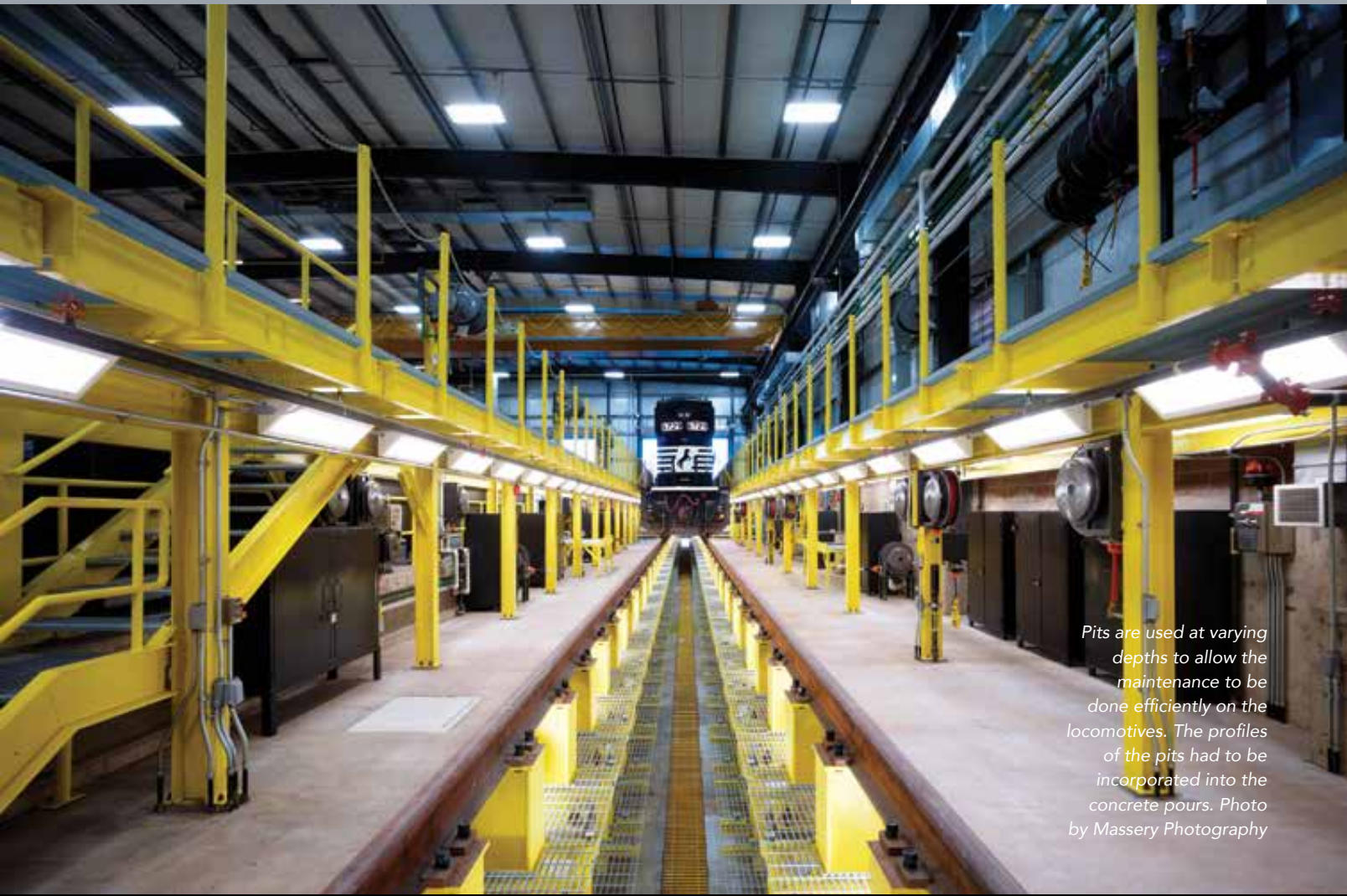
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*Pits are used at varying depths to allow the maintenance to be done efficiently on the locomotives. The profiles of the pits had to be incorporated into the concrete pours. Photo by Massery Photography*

## NORFOLK SOUTHERN CONWAY YARDS LOCOMOTIVE MAINTENANCE SHOP

“It’s a Jiffy Lube for locomotives,” jokes Joe Wardman, project manager for Burchick Construction, when asked to describe the maintenance facility that Burchick built at Norfolk Southern Railway’s (NS) Conway yard, located along Route 65 in southern Beaver County.



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Originally part of the Pennsylvania Railroad, the Conway yard is a "hump" operation. Hump yards are classification yards that sort thousands of rail cars daily, breaking them apart from one train and shunting them to trains that are being built to transport material to their destinations. So named because the incoming trains are sorted on a slight elevation (or hump) and the separate cars are routed to their outgoing trains using gravity, hump yards require a complex system of controls, switches and rails to process the freight and cars. Hump yards are also a convenient location to maintain the massive locomotives that drive the trains.

"Conway was the largest hump operation in America at one time," explains Bob Matuzak, maintenance shop manager for Norfolk Southern until his retirement in 2014. "Conway has an east and west hump. Cars are pushed up a hill, read for freight, sorted and then gravity pushes blocks of cars down to the rails. Conway controlled everything from the west to sort freight for the Eastern Seaboard."

When Norfolk Southern acquired part of Conrail in 1997, the Conway yard was part of that system. Rail volume declined over the next decade but the exploration of the Marcellus shale formation provided a boost to traffic again. The increased volume magnified the obsolescence of Conway's 105-year-old locomotive maintenance shop, which was a roundhouse built by Pennsylvania Railroad to maintain its steam engines. The roundhouse was limited structurally to house the



*The employee welfare building houses the offices and facilities that the Norfolk Southern workers use. The locomotive maintenance shop is beyond.*

cranes that lift the engines and turbochargers of the diesel locomotives. One small, poorly-drained pit existed to catch the 250 gallons of lubricants for the engines, transmission and air-conditioning that were changed out from each locomotive.

"It didn't have the creature comforts or technology needed to maintain a diesel locomotive," recalls Matuzak. "You could only work on the locomotives at a few locations in the old building. It required strategic planning to move the locomotives. It was like a chess game to move them around."

In 2013, Norfolk Southern undertook a project to replace the roundhouse with a state-of-the-art maintenance shop. Urban Engineers was hired to design the facility, which is comprised of two sections. A 15,000 square foot, two-story office and employee welfare center is a steel frame and masonry building, which includes offices, locker rooms and a cafeteria. The locomotive shop is a 42,000 square foot pre-engineered steel structure that looks ordinary from the exterior, but is anything but. It was the unusual nature of

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The system of piles and grade beams were poured in a grid pattern throughout to support the rails that would move the locomotives through the maintenance shop.



Photo by Massery Photography

the maintenance building construction that was attractive to Burchick Construction, which had never worked at the Conway Yards prior to the invitation to bid this project.

"It was different. It was a building but it's kind of more

transportation and when you throw the rail component into the project and it's not a typical job," says Wardman. "The structure itself, with all the concrete work, we self-perform a lot of that ourselves so it fits in that way. It just was different from the way we were doing the concrete, not for cars or foot traffic but for actual locomotives."

"Building a shop for locomotives is unique. A locomotive is a unique beast," notes Matuzak. "You have to tailor everything to a vehicle that is 17 feet high and four-and-a-half feet wide."

Burchick was one of the two low bidders on the project and, after an interview, was awarded the project by NS.

Including the foundations, slabs and platforms, the Conway project involved almost 4,000 cubic yards of concrete. That's nearly four times as much concrete as would have been used on a warehouse or industrial building of the same size. Roughly 440 16-inch piles were drilled to bedrock to support massive grade beams in both the exterior and interior of the building. For a building that size it would be normal to have perhaps 60 piles.

"The concrete work Burchick self-performed was extremely intensive," says Rob Tuttle, who was Urban Engineers project engineer at the Conway site. "There were three tracks that ran 300 feet through the building that were all supported by three-foot- to nine-foot-deep concrete mats that were ten feet wide. Because of the proximity to the river, the foundation had to be auger cast piles."

While there was nothing unusual about the chemistry of the concrete, the sheer volume was remarkable. Foundations are designed to support a building's structural system, essentially to bear the weight of the roof and the exterior walls. In the case of the Conway maintenance shop, the grade beams were needed to support the weight of the 200-to-250-ton locomotives as they moved through the maintenance process within the shop building. The auger-cast piles were designed to support those grade beams, meaning that the piles were spaced fairly evenly throughout the building's floor to tie together with grade beams. That presented an issue for sequencing, since the depth and proximity of the piles prevented Burchick from drilling and pouring them consecutively. Approximately 40 different concrete pours were necessary.

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"There were some corner piers where there were three piles supporting them. The piles were quite difficult to get in and the sequencing of the installation was critical, because if you tried to drill three holes together you would have cave-in," explains Wardman. "So we had to drill one and then move over to another area and drill another until the first one set. Later we came back to drill the second of the three, and then a third time we came back to get the other."

"We had it in the specifications that any piles within three feet of another could not be drilled within two days of that pile being poured to allow the concrete to set up," explains Tuttle. "I believe we had eight lines of piles to drill and Burchick did a great job of managing the pours. I think they averaged 20 piles per day. It was really impressive [to see] the speed with which they worked."

Over 3,000 anchor bolts, primarily needed to install the rail system, were installed. Here again there were unusual complications.

*"You could only work on the locomotives at a few locations in the old building. It required strategic planning to move the locomotives. It was like a chess game to move them around."*

Each of the bolts was anchored into the foundation concrete with about 15 inches exposed. The floor slabs were poured later, leaving just a few inches of the bolts exposed to pick up the structural steel for the building, racks or rails. The rails provided a further challenge in that the spacing of the anchor bolts had to precisely match the gauge of the rail. If the rails weren't set apart at the proper gauge, the locomotives could derail inside the maintenance facility.

Another significant challenge was the proximity of the existing facilities used for maintenance and operations of the yard.

"The roundhouse was right up against the back of the new building and the rails leading to that roundhouse that they had to keep in operation were literally 15 to 20 feet off the building. So we had to occasionally shut down a track when we got into that back corner," says Wardman. "Immediately on the other side of the building was the hump, maybe 40 or 50 feet away, so we were in between those two active areas. On top of

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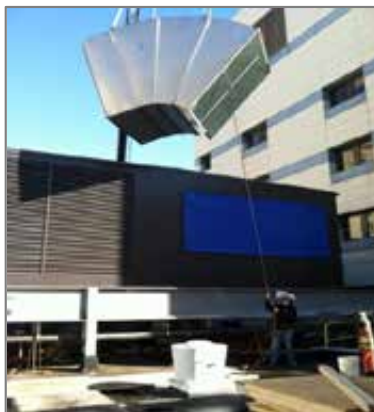


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all of that, running at the edge of the hump was the power for the facility. We could not get close to that."

With a busy rail yard operating constantly beside the building site, you might expect the vibration of the heavy vehicles to be an issue but the proximity created a different issue.

"It wasn't vibration but the screeching was the problem; it was non-stop," recalls Wardman. "Ear protection was a must. It was fingernails on a chalk board all day long."

The physical constraints were surprising, given the expansive amount of land that the Conway yards covers, but nearly every inch of the yard is used in the railroad operation, leaving Burchick with conditions that were more like an urban setting. To work within the constraints Burchick was forced to stage materials and installation from within the new building's footprint. Erecting the metal building, for example, was done by setting the crane inside the perimeter and lifting the steel from within, moving the crane along as the structure was in place.

"I would equate this to building in a place like Oakland on a corner block, at least for staging the job," notes Wardman. "But in Oakland if you need to redirect traffic, it's cars and you can send them to the next street. Here it was trains. You can't just say go over there; there are tracks and the trains have to stay on them."

To accommodate the unusual demands of the foundations and the site constraints, Burchick decided to sequence the project by pouring the foundations for the exterior walls, erecting the shell of the metal building from the unexcavated floor within and then completing the grid of piles and grade beams under cover. That gave the plumbing and utility contractors the chance to rough in while Burchick poured in other sections of the floor. Working from the outside in, Burchick left the center section to the end of the project, allowing them to backfill their way out of the building.

Wardman praised the subcontractors on the project. He pointed out that the unusual concrete sequencing made the daily concrete and steel testing, done by ACA Engineering, a critical element. He also noted the difficulty of mechanical and electrical work, done by Gunning Mechanical, SSM Industries and Arrow Electric.

"SSM Industries was a key player, with all of the oils, gases and hose reels. I think there were 170 hose reel systems for the lubricants," Wardman notes. "There were a ton of fittings, a ton of valves, a ton of solenoids. The systems had emergency shut-offs because if there is a leak somewhere, you don't want oil to continue to flow."

Rob Tuttle points out that some of the challenges were brought on by conditions that the construction and design team couldn't control.

"The biggest pitfall was probably the weather, with so much concrete," notes Tuttle. "At the start we got into a very cold winter. I remember the temperatures that December being in the single digits. There were days that were too cold to pour. Burchick had to have heaters at the site. We found ourselves looking at temperatures three and four days out."



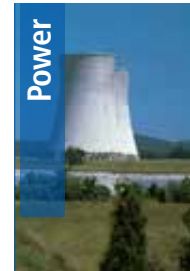
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"One other major challenge of the site was that the water table is seven feet below grade because of the proximity of the river and we had sump pits that were nine feet deep, with another three feet needed for the concrete," recalls Tuttle. "We were fortunate at the beginning that it had been a dry summer but any time there was a heavy rain we had to deal with water."

That high water table also brought into play one of the other headaches that comes with working on a legacy industrial site.

"There were also oil plumes above the water table," Tuttle says. "Several times during the project we had to call in a hazardous material team to remediate the oil that was floating on the water in an open excavation."

As the project advanced, there were additional sequencing challenges. NS was responsible for demolishing the roundhouse, but needed to be able to use the new maintenance shop first. Part of the welfare building and a storage building were located on the roundhouse footprint so the office portion of the welfare building had to be completed before demolition too, even though the remainder of the building couldn't be built until the roundhouse was gone. Wardman says that NS was pretty accommodating with the occasional disruptions that were needed to allow for construction

activities or to tie the existing rail lines into the maintenance shop access.

"As long as they knew in enough time they would schedule it unless there was an emergency and they had to tell us no. There were very few times when they couldn't accommodate what we needed or wouldn't allow it. There was very little downtime or lost time because of that," Wardman recalls.

Bob Matuzak explains that the railroad doesn't have much wiggle room in those decisions.

"While construction was going on we still had to operate a very important cog in the nation's rail system," he says. "We couldn't take it down and move all at once."

"We got a state-of-the-art facility for diesel locomotives," he continues, praising the finished product. "There are air-conditioned locker rooms, new toilet rooms, a lunch room and a new meeting room to assemble every morning. Then I went and retired two weeks later!" 

## PROJECT TEAM

---

Burchick Construction Company.....	General Contractor
Norfolk Southern Railroad.....	Owner
Urban Engineers .....	Engineer
ACA Engineering .....	Construction Testing
Gunning Inc. ....	HVAC Contractor
Arrow Electric.....	Electrical Contractor
Alliance Fire Protection.....	Fire Sprinklers
SSM Industries .....	Plumbing
C. Tucker Cope & Associates.....	Steel Erection
American Building Co. ....	Metal Building Supplier
H. R. Leuenberger Co. ....	Miscellaneous Metals
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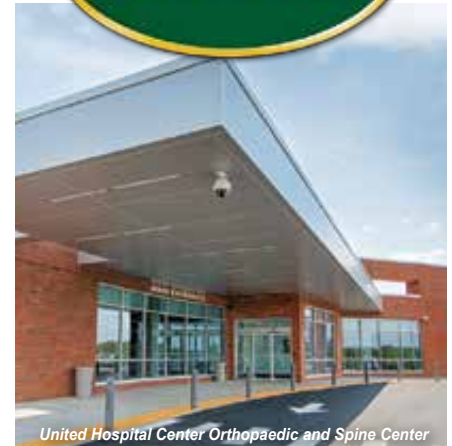


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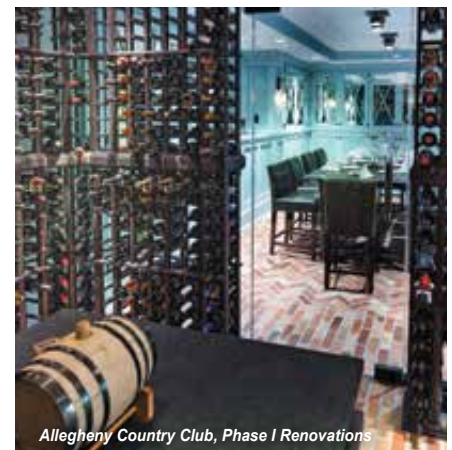
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*The headquarters office and fabrication shop of McKamish Inc. are located in Lawrenceville, where the company was founded.*



**BUILDING EXCELLENCE**

**D**avid McKamish had been running his family's business successfully for a decade when he realized that something had to change to take the company to the next level. He describes his "aha" moment at a retreat hosted by consultant FMI in the early 1990s as a pivotal time for his business. After listening to peers from around the country describe the way their businesses were run, he had an epiphany.

"I went to a four-day FMI training seminar expecting to get all fired up and come back rah-rah-rah and after about two days I was so discouraged, feeling that I didn't know anything about business leadership," McKamish recalls. "After finally getting over the shock of that, I decided to create a company vision so that everybody shares the vision and understands the culture. There's no question that had a big impact on our business"

"I realized that you can manage the heck out of your company but that is not the same as leadership," he continues. "Leadership is different from management. I decided we needed to start implementing that principle."

McKamish convened the entire office and field supervisors for an offsite meeting at Wildwood Country Club in 1994. Prior to breakfast, he had a makeup artist change his appearance to that of an old man as a way to drive home the point that things would change but that the company needed to establish an identity and have a vision and values that transcended and survived the current ownership. They sought ideas from throughout the

company and from friends in the industry. From that work, a set of five core values developed that they felt were at the heart of McKamish: Integrity, customer commitment, leadership and teamwork, profitability, and enthusiasm.

"It was hard work. We fried ourselves but created our product, who we are, based on input from everybody," states McKamish. "We plotted the course on which we would steer the company."

The defining of the values was a pivotal moment in the company, one of a handful of pivotal events that have defined the company.

McKamish was founded in 1975 as McKamish Metals by Harold McKamish, Dave's father. Harold had been the first sheet metal manager hired by Frank and Ed Schneider in 1963, just two years after they started Schneider Inc. Schneider grew extremely fast and they eventually spun off the sheet metal business into Schneider Sheet Metal, which Harold McKamish managed. The sheet metal business grew to have a handful of branches around the country.

David McKamish joined Schneider Sheet Metal to work while taking a break from college. After a couple of years in estimating and apprenticeship, Dave found himself running projects in Schneider's Rochester office. The experience taught him the importance of planning the job in advance, laying it out. He also saw the importance of maintaining good relationships with the client. His relationship with Kodak's engineering group brought Schneider a number of repeat projects that didn't require competition. He was settling into a comfortable situation in Rochester



when things changed. Harold McKamish and Frank Schneider parted ways in 1974. Harold founded McKamish Metals Inc., a sheet metal contractor with a shop on 55th Street in Lawrenceville. Dave McKamish returned to Pittsburgh to help his father.

In 1979, McKamish Metals landed a major project in the Baltimore area and Dave McKamish became the superintendent and project manager for the job. To mitigate the risk of the project, Harold McKamish created a joint venture with a local company to share the labor resources. That joint venture was McKamish Chesapeake and Dave McKamish moved to Baltimore full time to run that operation. McKamish Chesapeake had a successful run, landing projects like the Federal Reserve Bank, the Baltimore Aquarium and much of the Inner Harbor Redevelopment.

Things were not going as well for McKamish Metals however. A major project at the Tropicana in Atlantic City was going poorly and putting a financial burden on the company. Harold McKamish had to devote most of his time to bringing that project to a conclusion and as a result work in Pittsburgh suffered. In 1980 the company had added piping to its repertoire in order to serve its customers' HVAC needs. The expanded service wasn't getting the attention it needed and Harold again asked Dave to move back to Pittsburgh to help.

Unbeknownst to Dave, his father decided he was going to relocate to Arizona and start up a small mechanical company. In 1983, Harold McKamish called a meeting during which he announced that he was planning to shut down McKamish Chesapeake and move. Expecting that no one was likely to join him, Harold instructed the shareholders to choose new executives and gave them six months to turn things around. The group elected Dave McKamish as president.

"It was just like all the other positions I had no training for. I was just thrown into the fire," McKamish says. "My first efforts were to evaluate how things were going at the time. We had an accounting department that was bigger than most of our other departments because sheet metal was billing piping, and piping was billing sheet metal, but no one was billing customers because we didn't have any work. I decided we were going to throw out all these divisions and become one company. We would either sink or swim as a mechanical contractor. We would take on all the big boys."

The reorganization created an opportunity for Dave's brother Dennis to take on a new role. Dennis joined the company in Maryland and had experience in estimating. When David moved back, Dennis remained in Maryland for a while and then returned to Pittsburgh as a cost accountant. When the company's controller left, Dave McKamish found that none of the candidates to replace him were a good fit. Dennis agreed to take on the roll of controller, going to Duquesne University for advanced accounting courses.

"He took it on and has done just an excellent job," says Dave. "He's been a great partner."

McKamish spun off the Chesapeake operation and later added plumbing to the company's services in 1986. Over the next few years, McKamish was able to land a key job or two each year that enabled the company to grow as a full-service mechanical contractor. Among those projects were Mine Safety Appliance's Safety Products Division and corporate headquarters in 1985 and 1986; Veteran's Administration projects in Oakland and Highland Drive in 1987 and 1988; and its biggest project to date, the Biomedical Science Tower for the University of Pittsburgh in 1989.

*McKamish's executive team includes (from left) John Jordan, Dave Casciani, Dave McKamish, Dennis McKamish and David Lyon.*



It was also in the late 1980s that Dave McKamish felt the company's culture needed a tweak.

"The point became apparent to me that if we were going to be successful there needed to be more harmony among the employees. I wanted to connect the field to the office," he explains.

McKamish began what would become an annual event that gathers all of the supervisory and office staff off site on a weekend. Attendance is voluntary and includes spouses. It's a meeting that includes training, dialogue about the company's performance and culminates in a party for 220 people, although there have been as many as 280.

"The first year we did a golf tournament at Quicksilver and had a party that night and at a hotel by the airport. In every foursome there was a member from the office, a plumber, a fitter and a sheet metal worker," he says. "Then we moved it to Hidden Valley for a few years until we outgrew that. It only took a couple of years before you could tell that the field people started to realize that the people in the other trades we're okay and that the office people we're good people too. It really started creating some good synergies by getting people connected. It's not cheap but it's part of the culture and a great investment in our people."

During the next several decades McKamish's management team worked hard to grow during good times, reaching nearly 700 employees at one point, and to prepare for slow markets by rebranding to McKamish, Inc., investing in Building Information Modeling (BIM) and creating the McKamish Family Foundation. The company succeeded in landing some of the region's landmark projects of those years, including UPMC Hillman Cancer Institute, Children's Hospital, The Tower at PNC Plaza, Western Maryland Health System Hospital, University of Pittsburgh Biomedical Science Tower III, ATI Allegheny Ludlum's Hot Strip Mill and the PPG Paints Arena. The latter Dave McKamish says was perhaps his favorite project because of the complexity, aggressive schedule and the collaboration needed to complete the arena.

The Penguins' arena also gave McKamish Inc. the chance to work with the BIM technology in which it invested in during 2009. McKamish Inc. had used computer-aided design and fabricating to produce its shop drawings and pre-fabricate as much of its piping and sheet metal for some time. That sort of investment is part of the company's culture and allowed McKamish to successfully build projects that had difficult schedules or field conditions. Using BIM was an extension of the commitment to advance planning that McKamish makes.

"I've always believed that if you invest extra time and money upfront, the job will go smoother and we'll be able to adapt to the problems and changes in schedule by having a good plan



*McKamish Inc. installed the bull duct at PPG Paints Arena 150 feet above the ice before the roof of the arena was completed.*

together," McKamish notes.

Because charitable giving is a very important aspect of the company and the employees of McKamish, the formation of the McKamish Family Foundation has allowed for charitable giving even during slower years.


"While we don't want to be perceived as a big project only contractor because that's not our bread and butter, projects that are real challenging and or schedule driven or a combination of both are definitely in our wheelhouse. We're not afraid to take on those risks a little differently."

One of the focuses of McKamish's planning today is for a future with-

out the two major shareholders. Dennis is currently working with an eye towards retirement as he trains David's son Kevin in the role of CFO. Dave's daughter, Naley, joined the company in 2016 as marketing director. Dave jokes that, although Dennis is eight years younger, he has always wanted to retire first.

"He's always said he will retire two weeks ahead of me because he wants no part of running the business," Dave laughs. "I turn 65 this summer so obviously succession planning is an important part of our business right now. My brother's children are all teachers. I have two kids in the business but I started late so my children aren't ready to take over the business. We're trying to put the team together that's going to carry on the company so that the legacy and culture carries forward."

Dave McKamish recognizes the difficulty of going from a very hands-on owner to an ambassador, mentor and teacher. He knows that giving his people the reins is necessary if they are going to be able to manage the business in the future.

"For us to be who we want to be to our clients, we have to be a certain way internally. You can almost tell during an interview process if someone will fit the culture," he explains. "If you don't fit into that culture you'll never fit into our company. If you don't have integrity it's not going to work. If you want to be profitable but you want to do it by hurting our customer instead of controlling efficiencies in our company, it's not going to work. And you need enthusiasm. If you can't get excited about what you do, please find somewhere else to work!" 

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# LEGAL PERSPECTIVE

## The Buy American Act: Are You Compliant?

BY LORI WISNIEWSKI AZZARA

**T**he federal government has a long-standing preference for incorporating domestic materials and products into public construction projects. While a number of statutes and regulations promote this policy, the Buy American Act of 1933 (BAA) is the oldest and arguably most well-known. The essence of the BAA's construction provisions sounds simple: the use of foreign-produced materials and products on public construction projects is prohibited. However, a dense web of regulations and statutes interact to create exceptions and exemptions to the BAA's application, making the BAA one of the most complex bodies of law to comprehend. Those contractors who fail to comply with the BAA's requirements can face costly legal issues, debarment or, in some situations, criminal investigation and prosecution. With the new administration, now is the time to get familiar with the BAA, and the following primer is a good place to start.<sup>1</sup>

### 1. DOES THE BAA APPLY TO YOUR PROJECT?

The first step is to look at the overall dollar value of the project: contracts for the construction, alteration or repair of any public work valued between \$3,000 and \$7,358,000 are subject to the BAA. Construction contracts with values of \$3,000 or below are exempt from the BAA and are viewed as "micro-purchases." Construction contracts that exceed \$7,358,000 may be subject to certain foreign trade agreements.

### 2. WHAT CONSTITUTES DOMESTIC CONSTRUCTION MATERIALS?

The BAA requires the use of only "domestic construction materials" on public projects. So what are domestic construction materials? To answer this question, various definitions must be collectively considered. Start with the definition of "construction materials," which are any article, material or supply brought to the construction site by a contractor or subcontractor to be incorporated into the project.

Next, consider the domestic requirement for construction materials. The BAA requires that every public contract include a provision requiring contractors, subcontractors and suppliers to use only:

- unmanufactured materials that have been mined or produced in the United States; and

- manufactured materials that have been manufactured in the United States "substantially" from materials mined, produced or manufactured in the United States.

While unmanufactured materials will be considered domestic if they are mined or produced in the United States, manufactured materials will only be considered domestic if (1) they are manufactured in the United States *and* (2) the cost of the components produced or manufactured in the United States exceeds 50% of the cost of all its components.

A component is any article, material, or supply incorporated directly into a construction material. The method for calculating the cost of components depends on whether the component is purchased or manufactured by the contractor. If the contractor is *purchasing* the component, the acquisition cost will include transportation costs and any applicable tax. If the contractor is *manufacturing* the component, the manufacturing costs will include transportation and overhead. Bottom line: in order for a manufactured construction material to be considered domestic, the cost of the components produced in the United States has to be more than *half* of all of the component's total cost. This in addition to the requirement that the construction material be manufactured in the United States, a requirement that contractors often overlook.

Construction materials may also be considered domestic if the material is a "commercially available off-the-shelf" (COTS) item. To qualify as COTS, an item must be customarily used by the general public for non-governmental purposes and must be sold in substantial quantities in the commercial marketplace.

If the construction material does not meet one of these requirements, it may not be incorporated into the project *unless* an exception to the BAA applies.

### 3. WHAT ARE THE BAA'S EXCEPTIONS AND HOW DO YOU APPLY FOR THEM?

There are a number of exceptions to the BAA that may allow a contractor to acquire foreign construction materials. In order for an exception to apply, the contracting agency must determine that:

- application of the BAA would be impracticable or inconsistent with public interest. Often times, this occurs when the contracting agency has an agreement with a foreign government that the BAA will not apply;

<sup>1</sup> This article focuses on the BAA's application to construction materials. The BAA also contains provisions that apply to supplies and products purchased by the government or contractors that are incorporated into public projects. These provisions present an additional set of complicated questions that require a separate in-depth analysis as to their applicability.

- a particular construction material is not sufficiently available in commercial quantities or not of sufficient quality; or
- the cost of domestic construction material is unreasonable, i.e., the cost exceeds the cost of foreign construction material by more than 6%.

In addition, the passage of the Trade Agreement Act authorized the government to waive the BAA for eligible foreign products acquired through various trade agreements, such as certain free trade agreements and for World Trade Organization countries.

The onus is on the contractor to request the exception, but when does it need to do so? According to the Court of Appeals for the Federal Circuit Court, a contractor should make the request “in the first instance *before contract award and surely before the contract has been performed.*” Prior to submitting a price, contractors should determine whether the project will require the use of any foreign construction materials and include the BAA exception request with their offer. To avoid rejection of an offer that includes such a request, it is a best practice to submit an alternate offer based on the use of domestic construction material. Once an agency makes a determination that an exception applies, the foreign materials that have been accepted will be listed in the contract.

Exceptions can be granted *after* a contract is awarded, but this is a dangerous and risky road to go down, particularly if the foreign construction materials are already incorporated into the project. If requesting an exception post-award, a contractor should be prepared to explain why the request was not made pre-award or why it was otherwise not reasonably foreseeable. In the event the exception is granted post-award, adequate consideration must be negotiated and the contract must be modified to allow the use of the foreign construction material. If the request is denied post-installation, the cost of removing and replacing the foreign construction material falls on the contractor's shoulders. Keep in mind that in addition to the removal and replacement costs, there may be delay and schedule impact costs assessed to the contractor.

#### 4. WHAT ABOUT YOUR SUBCONTRACTORS AND SUPPLIERS?

The BAA applies to *all* construction materials used on public projects, including those provided by subcontractors and suppliers. In fact, contractors can be held liable for noncompliant construction materials incorporated into projects by their subcontractors or suppliers. It is, therefore, extremely important for contractors to be mindful of the BAA when entering into subcontracts and purchasing construction materials from suppliers. It is critical that a contractor confirm with its subcontractors and/or suppliers that all construction materials comply with the BAA. In addition to the required contract provision relating to manufactured and unmanufactured materials previously discussed, it is highly recommended that contractors include a flowdown provision in their subcontract that requires subcontractors to comply with the BAA.


#### 5. WHAT HAPPENS IF YOU FAIL TO COMPLY?

If the contracting agency determines that a contractor or subcontractor has used foreign construction materials without authorization, the agency can require that the materials be removed and replaced. If removal and replacement would be impracticable or cause undue delay to the project, the agency can decide to leave the unauthorized foreign construction material in place. However, the contractor is not out of the woods. If the agency finds the BAA violation to be “sufficiently serious,” the government can terminate the contract for default or suspend or debar the contractor, subcontractor or supplier. If the noncompliance with the BAA appears to be fraudulent, the agency can refer the matter for criminal investigation.

In addition, if an agency finds that a contractor has failed to comply with the BAA, those findings become a public record. Most importantly, the contractor, *and* any subcontractor or supplier associated or affiliated with the contractor, cannot be awarded another public contract for 3 years. Because all parties to a contract can be implicated in a single violation, it is in each party's best interest to ensure that all construction materials incorporated into a project are BAA compliant or that an appropriate waiver has been timely requested and granted.

#### 6. ISN'T ALL OF THIS GOING TO CHANGE?

On April 18, 2017, President Trump signed an Executive Order—Buy American and Hire American. The Order confirms the executive branch's policy of maximizing the use of domestic goods and materials. Consistent with this policy, the Order directs agencies to “scrupulously” enforce the BAA and to minimize the use of waivers granted under the BAA.

While the Order itself does not substantively change the application of the BAA, it signals that significant changes to government contracting may be on the horizon. Now is the time to gain a better understanding of the BAA and its requirements. This article only scratches the surface of the BAA—a more in-depth analysis is necessary to ensure full compliance and prevent an unwary contractor from inadvertently jeopardizing its ability to perform on future federal construction projects. 

*Lori Wisniewski Azzara is a Partner in the Pittsburgh Office of Cohen Seglias. She practices in the areas of construction and commercial litigation and has experience in contract negotiation, claims for delay and inefficiency, mechanics' liens, and all types of contractual disputes. Lori is active in the firm's Green Building and Sustainability practice, where she counsels clients in avoiding and resolving issues that commonly arise on green construction projects, including those relating to certification. Lori can be reached at lazzara@cohenseglias.com or 412-434-5530. Cohen Seglias Summer Associate Sydney Pierce also contributed to this article.*





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# FINANCIAL PERSPECTIVE

## Surety Market Update

**C**ontract surety bonding serves as the backstop of the construction industry. The business of insuring the performance of construction contracts experienced another strong year in 2016. Losses declined. Insurers made strong profits. Agents saw lots of activity and many had record revenues. As the construction industry looks at another solid year in 2017 – and perhaps even better than solid in Western PA – surety professionals in Pittsburgh describe the market in remarkably similar terms. They also seem convinced that the good times today will lead to problems down the road.

Like with all businesses, growth drives the surety industry. Even in relatively good times, there will continue to be pressure to grow and take market share when organic construction growth doesn't keep pace. That's when most veterans of the industry expect some bumps in the road.

"Is your question, will the sweet smell of the premium overcome the stench of the risk," jokes Jim Bly, managing director for Alliant Construction Services Group of Alliant Insurance. "I think that will happen. When you have new capacity coming into the market and there's not a constriction of underwriting terms from any one carrier, then the only way to acquire new business is to lower the underwriting standards. The number one cause of contractor failure remains the overextension of financial and operational resources. So that will happen and you're seeing it right now in the SDI [subcontractor default insurance] market."

"Because we're dumb! That's the cyclical nature of the surety business," laughs Chris Pavone, contract surety manager for Liberty Surety, when asked why he thought problems would happen again. "There are companies competing and the market is getting softer. People are extending terms a bit. Pricing gets more favorable. People are happy with the results so they are looking to grow and will become more aggressive with underwriting."

"Sureties are always pressing for more business but we continue to see underwriting discipline applied to risk," says Jay Black, managing partner at Seubert & Associates, Inc., a Pittsburgh agency. "It's not yet like the mid-to-late 1990s, when sureties were cash flow underwriting. I hope that won't happen again in my lifetime but we tend not to learn from history and will likely see some significant losses following the next construction down-cycle."

Don't mistake the candor of veteran surety professionals for pessimism. These same three executives, and virtually all other sureties, see the market as favorable and stable, for both the insurers and the insured. While insurers understand

that eventually markets get overextended, no one is ready to forecast when that will next occur. For the time being, the surety industry is operating from strength.

Total surety writings increased from \$5.651 billion to \$5.883 billion. The direct loss ratio dropped from 18.1 percent in 2015 to 15.5 percent last year. That extends the streak of low-to-manageable losses that go back a decade.

Underpinning this stretch of solid performance by the surety industry is strong financial performance by the contractors in the industry. That seems to be true both nationally and locally.

"Contractors in the industrial market and those that can benefit from the cracker plant or oil and gas markets are doing well. Those margins are strong. The margins in vertical construction are more challenged," notes Bly. "There's still a lot of capacity, a lot of bidders on commercial building projects but nonetheless we're seeing positive results overall, with the normal 10-15 percent of the contractors losing money. That is typical for any market and nothing out of the ordinary. We see no heightened financial risk from our book of business or the subcontractors we review."

Because of its subcontractor financial benchmarking service, Bly estimates that Alliant will see the financial results of more than 2,000 subcontractors across the U.S. Comparing the market to a bell curve, Bly notes that generally there are 10-15 percent of the companies doing unusually well and the same experiencing financial troubles, with about 75 percent of the industry doing fine in the middle.

"It might be a little bit skewed towards less favorable results than you'd like to see but overall it's pretty good," he observes.

"Most contractors made money in 2016. Less than five percent of our customers lost money, but the losses were nominal," says Pavone. "Margins have not shown much improvement. General contractor [margins] were mostly flat with some improvement for subcontractors."


"Not all our clients have reported their 2016 results yet, but with 73 percent reporting, 84 percent of our construction clients were profitable in 2016," reports Black. "This compares to 85 percent in 2015, so we are likely within a margin of error. Losing money doesn't mean they caused a surety a loss, just that they did not enjoy a net income for the period."

Ryan Burke, vice president and broker for Huntington Insurance, reports that his clients generally fell within the same range of profitability. Burke expressed concerns that the steady performance of the market could lead to complacency, especially in




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cities where insurers were entering new markets or facing internal pressure to grow more rapidly.

"With increasingly complex contracts, there is certainly increasing focus on contract when agreements depart from industry standard language. With each contract reviewed, deciding which risks are insurable, which risks must be assumed, and which are simply unacceptable can be a difficult process for contractors and their surety professionals," Burke says.

It should be comforting that the surety industry is considering where its risks lie during good times. That may, in fact, be a signal that the industry has learned some lessons from past business cycles when pressures to grow premiums overheated the market. All the professionals interviewed mentioned steps that were being taken to mitigate systemic risks. Pavone also noted concerns about contract terms. Black observed that while there were some "sexier" deals being floated to contractors most came with higher rates and restrictive terms, such as escrow arrangements and profit hold-back, to mitigate the risks.

Another point of agreement was that there was a bifurcation of the market between general contractors and subcontractors. Most felt their subcontractor clients had deeper backlogs than their general contractor clients. That fact may also be why subcontractor profit margins had grown. Subs also have felt the pinch of the labor shortage sooner. Concern about labor supply was the unanimous primary concern among surety professionals in Pittsburgh. With big projects looming, most are concerned that stresses on the specialty contractors will ripple out.

There have been significant major subcontractor default insurance losses, particularly in high growth markets. Because SDI projects don't require bonding, the limits of a bonding program don't apply or act to reign in an overextended sub. And since large projects are prime candidates for SDI programs, subcontractors working on large projects can take on much more work than their bonding would allow them. The SDI market in places like New York, Baltimore/Washington, Florida, California and major Eastern cities is large enough that subcontractors can build large volumes without even having a bonding program in place. As SDI losses mount, specialty contractors viewed as higher risk will be pushed back to sureties.

Bly stresses that while this is a growing problem that will ultimately impact bonding, these kinds of SDI programs aren't being used in the Pittsburgh

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market. That doesn't mean the risk of tight labor to specialty contractors is less.

"I remain optimistic, quite frankly, but I'm still concerned about the cracker's draw on labor. We have been talking about this project for years but we haven't actually seen the impact until now," admits Black. "I have clients already complaining about not having enough labor. I presume there will be people coming from out of town. These things tend to work themselves out but it's the uncertainty that is a concern."

"Labor supply is what we're keeping a close eye on. When I meet with a contractor I ask if it's a problem and if it is, how they plan to deal with it," agrees Pavone. "Everyone I meet with says the same thing, that it's their number one concern. If somebody said they hadn't thought about [tight labor] I'd be very concerned."

"If there is any meat on the rates with your clients, you better watch out," he asserts.

The more likely competitive tactic is the extension of capacity or weakening of terms. These tactics can be incremental and gradual but in a market where there may be more construction than the labor force can produce, even small concessions can be magnified.

"It's hard to know when enough is enough with an existing account where things are going really well. [Problems] tend not to come from jumping on a new client but from not knowing when to get off an existing one," admits Pavone. "The reality is that even when you know a contractor is having some problems it's tough to walk away. You still have backlog and projects that have to be worked through."

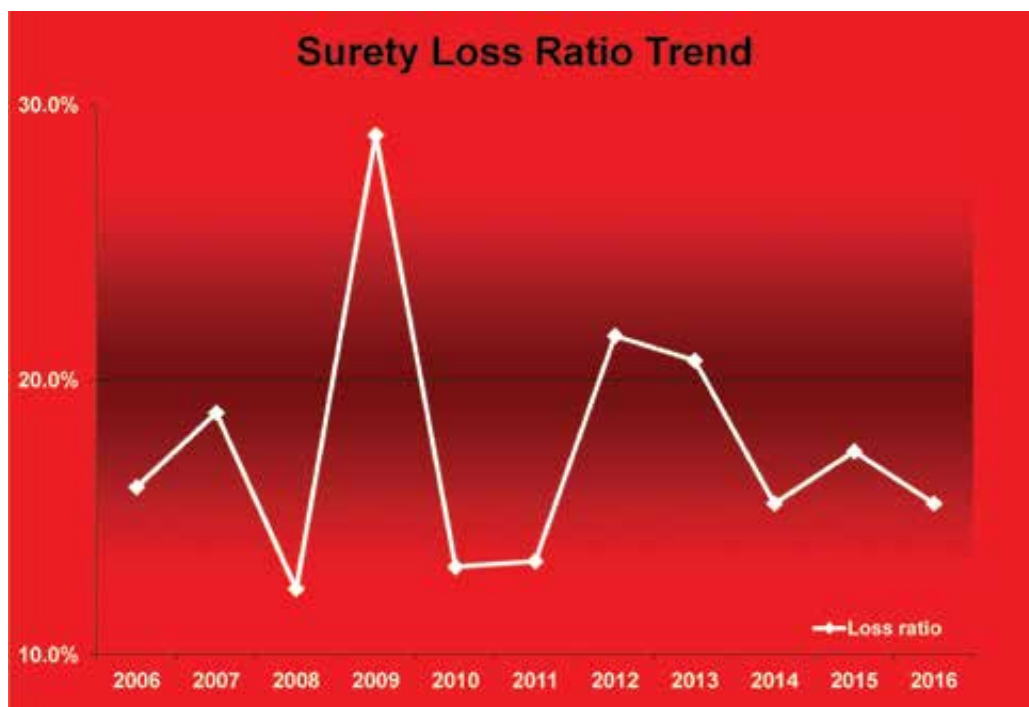
"There are new players coming into the market still. We're seeing capacity increases across the board. That's how you acquire new business, to offer more bonding capacity under more favorable terms. More favorable terms meaning lower capital requirements, less personal guarantee, more favorable terms and conditions and more favorable pricing," says Bly. "We're not seeing a big price dip but we're seeing some stretching of balance sheets to acquire more market share. The market is ripe for that. There is growth coming so people are trying to get more bonding capacity."

Evidence of excess capacity is also manifest in the increase in project size that the industry is will-

ing to bond. It wasn't long ago that the \$1.3 billion dollar Oakland Bay Bridge project could only attract \$350 million in bonding from multiple insurers, Bly reports that projects up to \$2 billion have been bonded this year.

If tight labor concerns cause contractors to pull back, adding capacity won't be an incentive to change surety relationships. The enticement of easing indemnification for construction company owners will be attractive, however, and that is a growing trend.

"I haven't seen personal indemnity arrangements as loose as they are now. Depending on the size of the company and the balance sheet strength, surety bond underwrites are open to



Concerns about tightening labor supply hit at core issues for the surety industry. Most obvious is the fact that the risk of non-performance grows if a contractor can't staff the project. Profits will decline as productivity falls. Contract defaults will rise. On a more competitive level, the short supply of labor is at odds with one of the main strategies for acquiring new business or growing the business with existing clients.

Pittsburgh is not a market with high rates. The competitive nature of construction and ample capacity have kept bonding rates low in our market and would not make an easy target for a hungry insurer. Burke says that new bonding companies trying to gain share in Pittsburgh will struggle in comparison to many markets.



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limiting the level of personal indemnification," observes Burke.

Having owners keep skin in the game by having personal assets in the business is one way that sureties increase their comfort level that the contractor will do what is needed to perform, even in a losing situation. When contractors' balance sheets are strong, with plenty of capital reserves, sureties can back off on personal indemnification. That same strategy can be employed in times when the business is trending better, like in 2017.

These are heady and conflicted times for the surety industry. It is certainly a great time to be in the business and it's a good time to be a contractor. In Western PA, the prospects for the market are good and improving. At the same time, the kinds of conditions that precede a storm are also present. Insurers have plenty of capacity to use and the pain of the high losses of the last decade is fading. Underwriting discipline has, for the most part, held the line against excessive risk-taking. That can embolden companies to be more aggressive. The safest course for contractors and project owners to follow is probably one that anticipates the inevitable downturn, even if it is years away.

"It's the time to be vigilant and manage your surety relationship. Stay out in front of what they need because once things turn, you're suddenly in a hard market and scrambling for capacity," Bly cautions. "Contractors that rely on their bonding line for their life blood, if they lose that capacity it can be devastating. Your surety underwriter is your best friend, until the day he declines you." **BG**



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# MBE / WBE COMPANY SPOTLIGHT



**A**licia Avick does not approach her business like many small business owners. She shies away from promotion. (She had to be convinced to sit for this profile.) She isn't trying to become Pittsburgh's biggest engineering company. In her 13th year of self-employment, Avick is as focused as ever on balancing all aspects of her life.

"It's grown slowly over 12 years. My father, when he retired, was my second employee. We now have five employees that work at NASA's Goddard Space Center full-time. Our growth allowed us to bring Julie in two years ago to expand our services. Now we offer environmental engineering, as well as commissioning and mechanical design. It has been a slow growth, but I never planned to grow any faster," Avick says.

The "Julie" to whom Avick refers to is Julie Barg, director of environmental services for Advantus. The two women grew up together in Upper St. Clair and attended Notre Dame at the same time. Although they were pursuing different courses of engineering, they ended up spending a lot of time together.

"I was in the civil engineering program and Alicia was mechanical," recalls Barg. "Actually the civil and mechanical engineers initially take a lot of the same courses. So we had a lot of classes together freshman and sophomore year. We know each other pretty well."

Barg started with Michael Baker International immediately upon graduation from college and was fortunate to be part of a group of young engineers who were given a wide variety of experiences, rather than being funneled into a discipline. That broader base of experience prepared Barg well for the demands of working in a small practice where she is essentially the sole practitioner of her field.

"I really enjoy touching a project from start to finish. I am involved with business development as well as engineering. I have my hands on every aspect of the project and get to do the work and be out in the field," Barg notes. "That's great. There's

an advantage to being small and picking what you want to do."

"I think there is a lot of opportunity here to grow. It's just a matter of networking, getting in front of the right people," she continues. "Alicia and I talk about this all the time. We will start with a small project to show you how we work, and then build on that relationship with somebody so we can go to the next level."

Alicia Avick's journey to founding Advantus Engineers started with employment in the HVAC equipment industry. Avick was offered a job by Carrier Corporation upon graduation but chose to work with the manufacturer's local dealer, Standard Air & Lite, instead. She was able to get valuable experience but after a few years she began to look for ways to expand her career.

"I thought about law school or other career options. I talked to people I trusted, including some of my managers at the time," explains Avick. "I thought they would say that I was way too young to start my own business. Instead they said to do it now before having children and needing to rely on an income. It's not what I expected to hear but it was really good advice. I think when you get into your thirties and you have children and you're making an engineer's salary it is a difficult thing to give up."

"The business started because for Carrier I specialized in automatic temperature controls and saw that it was a "black box" for a lot of owners and engineers," she notes. "So I thought that I could do something with it that would be different. I



Glenn Avick, Julie Barg and Advantus President Alicia Avick (right).  
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started consulting for owners and that has morphed into what everyone knows now as commissioning."

Commissioning is the practice of making sure that the energy savings and performance the owner expected is achieved. Commissioning agents work with owners and consulting engineers to reconcile the differences between the specifications, the installation, and the performance. Avick saw the need in 2004 and sees the demand growing.

"Controls have become so complicated. The specifications have gotten so detailed. The sequences of operation are complicated to try and achieve energy savings," she asserts. "A lot of what I do is explain the difference in what was specified and what is actually being done. Most often these variations achieve the same outcome but it is important to note the changes."

Avick points out that with proper commissioning, the performance the owner gets is often better than what was originally specified. She finds Pittsburgh to be a strong market because of all of the LEED-certified buildings but points out that a number of her clients are owners who just understand the value of commissioning.

A sole practitioner until 2011, Avick brought her father, Glenn Avick, in as vice-president to expand Advantus' design capabilities. Glenn Avick retired after a long career as an engineer in Pittsburgh, including running Peter F. Loftus Engineers and also serving as a director of Facilities Engineering at the University of Pittsburgh. Four years later, Julie Barg joined the company.

Having the environmental expertise helped Advantus spearhead a game plan for a long-time client a year later, when the Pittsburgh Public Schools wanted to survey all of their schools for lead in their drinking water. Advantus' performance on that project turned into introductions and small opportunities at Pittsburgh Water & Sewer Authority and ALCOSAN. Building the environmental business through client word of mouth and reputation is fine with Alicia Avick, who recalls that her first project paid Advantus \$400 to write a specification.

"I bless anyone who can grow a business quickly but I am satisfied growing slowly. We want Julie's part of the business to grow but we understand it's going to take time," Avick says.

Part of the growth Avick has experienced has been the transition from engineer to business owner. That's not always a smooth transition and there have been surprises, like with any business. Asked about the most surprising aspect of being self-employed, Avick replies with a laugh, "that people don't pay their bills! I really didn't get that. I get a bill at home and I have to pay it before I go to bed or I can't sleep. I had no idea how slow the payment was in this business."

She has a sounding board about business issues in her father, but she jokes about his interest in such problems. Avick recalls a story about having to choose healthcare providers when Advantus landed its contract with NASA. When she asked about plans she was evaluating, Glenn replied, "all I

know is it's complicated!" Alicia says she made that decision on her own and it was a great learning experience.

Avick's business philosophy focus is on solving Advantus clients' problems even when they may be outside of traditional engineering. She recounts the impact that an early project made on her and her business philosophy.

"One of my first significant projects was for Children's Hospital's satellite building in Wexford. They came to me because they wanted to upgrade the controls," she recalls. "They got a price from [a control company] but it was just a piece of paper and a quote. Children's didn't know what they were getting or if it would solve its problems. I wrote a specification and the control company bid to that spec. Then I sat down with the contractor and commissioned it. Eight or nine years later I ran into the technician on the job and he told me they hadn't needed to go back to the building since."

She concludes the Children's Hospital story by noting that both her children have since had surgery at the center, pointing out how those kinds of interrelationships are an important aspect of doing business.

"There's something to be said for being invested in your community and the work that you do there," she says. "I always point to the Penguins' arena, where we were a sub to another engineer. There's a project that finished early and under budget. That doesn't just happen. I think everybody on that project had a vested interest in seeing it done well."

"I think that's part of the reason our growth has been so slow. I didn't hire anybody until I hired my dad. I wanted to know that what's done was being done right," Avick admits. **BG**

## Advantus Engineers

Alicia Avick, PE LEED AP BD&C

Main Office:

300 Bilmar Drive, Suite 250

Pittsburgh, PA 15205

T: 412-489-9090

[aavick@advantusengineers.com](mailto:aavick@advantusengineers.com)

Maryland Office:

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# TREND TO WATCH

## A Shortage is the Next Housing Crisis

**H**ome ownership has been one of the key attainments that separated the American middle class from the working classes of the rest of the world. The biggest single investment that most Americans will make, the home purchase has historically been a careful and conservative decision; and the reward for that care has been slow but reliable appreciation in value as the homeowner built equity by paying down their mortgage.

That reliability went out the window during the housing bubble of the mid-2000s. The mortgage and financial crisis changed the housing market dynamics. Steady became volatile. A period of seismic readjustment was required to correct the imbalances in the market. The pendulum swung fully in the opposite direction from the policies that were built on home ownership as a right.

Now, a full decade after the phrase “subprime mortgage” entered our collective consciousness, the housing market is entering another volatile phase. This time around the problem is 180 degrees opposite that of 2007. Whereas easy mortgage money during the bubble provided a way for more people to buy homes than could really afford them, today’s dilemma is a tight supply. For homeowners, this condition is a happy one. Prices are rising faster than normal because there are more buyers than sellers. Instead of being upside down, like happened in 2009 when home values plunged, homeowners are seeing their equity grow faster than expected.

After the heartburn of a decade ago, such market conditions hardly seem like bad news. And for sellers the conditions bring good fortune. But, like with most market imbalances, today’s conditions have a downside. Buyers are forced to make quick decisions about the home they want and many find themselves in a bidding war. Rapidly-rising prices are making it harder for first-time buyers and with interest rates rising – albeit only slightly for now – the pressure on first-time buyers won’t be easing.

There are two main issues creating the problem: fewer existing homes on the market and less new construction. These two things don’t usually coincide. In fact, tight supply of existing homes has always sparked more new construction. But there are a couple of factors limiting new construction, both hangovers from the mortgage crisis. There are fewer homebuilders and the obstacles to residential development are greater than ten years ago.

This interesting and contrary housing market is a national phenomenon and it is also a Pittsburgh phenomenon. The housing crisis of 2007-2008 largely bypassed Pittsburgh. While there was a slight increase in foreclosures – and a shakeup among the lenders that dabbled in subprime loans – there were none of the major problems that other cities faced. Few people lost their homes. Home values stumbled slightly for a couple of years. But by 2010 home values were increasing again and, thanks to

the Marcellus Shale boom, Pittsburgh’s housing market became healthier than it was before the Great Recession. Yet for the market’s health, new construction has not returned.

Seen from a number of perspectives, this tight supply issue isn’t a big deal. Circumstances will no doubt change to either increase supply or quell demand. In Pittsburgh, however, there are few indications that a significant change is on the horizon. For a city that is trying to attract younger skilled workers (and succeeding), an extended period of tight supply could impact one of Pittsburgh’s biggest advantages: its affordability.

### SWINGING THE PENDULUM TOO FAR

The seeds of this looming housing shortage were certainly sown during the Great Recession. While the housing crisis was the making of two presidents – Clinton and Bush – the crash coincided with the election of a third president, Barack Obama. His administration, which began with a Democratic majority in Congress, accelerated what the market forces would have done to correct the oversupply of houses and money. Legislation like Dodd-Frank made conditions more difficult for home buying and building, but the private sector also responded in ways that left us in the bind that exists today. Regardless of the reasons for the short supply, the current condition is a simple numbers game.

Between 2009 and 2016 there were 6.9 million units of new housing started, a number that is well below the average for the previous three decades. During the same period population grew in the U.S. by 19.7 million people. Using the historical average of 2.5 persons per household, roughly 7.9 million households should have been formed in those years. Allowing for 1.9 million units of housing that were either demolished, condemned, or otherwise removed from the dwelling stock, the net number of homes available in the inventory for occupancy is nearly three million units less than the number of buyers. To a lesser extent, Pittsburgh experienced the same dynamics.

An examination of the housing data for metropolitan Pittsburgh reveals a tale of two markets: one before 2008 and one after. From the early 1990s, when the housing market began to expand in response to Pittsburgh’s economic rebirth and the completion of several important infrastructure projects (think Parkway North), builders were consistently starting between 2,500 and 3,500 single-family detached homes. In fact, the average number of new homes started during the 1995-2007 period was just over 3,000 units. The same was true of single-family detached homes – mostly townhouses – which saw an average of 928 units built during that timeframe. For nearly 15 years there were about 4,000 new units of single-family new construction available for sale in the Pittsburgh market. That changed in 2008.





The share of mortgages for first-time buyers – an indication of Millennials becoming homeowners – has grown significantly since 2015.

New home construction in Pittsburgh fell by almost 1,800 units per year from 2008 until 2013. Economic uncertainty impacted demand during the first couple of years following the crisis and tight lending standards for residential mortgages pinched demand for a few more years. A boom in apartments filled the

demand as Pittsburgh's economy saw double-digit job growth from 2010 through 2012 and the stage was set for a housing market lift-off. The market is still awaiting that lift off.

During the nine years since the recession started, there has been an average of 1,920 new single-family detached homes started. The average for the last five – which covers the period in which Pittsburgh saw job growth – has been 1,962. Apartment construction tripled during this latter period, with an average of more than 2,600 units built each year; however, even as that market softened, new home construction for sale has remained unchanged.

Logically, this unusual stagnation of the new construction market would be offset by a robust existing home sales market. That hasn't happened. Actually, the opposite has occurred. For several reasons, existing home sales should be increasing rapidly but even a recent improvement in sales hasn't changed the overall trend. There are fewer houses to sell, even though metropolitan Pittsburgh is a place people want to live.

West Penn Multi-List, Inc. recently released its data on existing home sales in the first quarter of 2017. When comparing January-March 2017 with the same period in 2016, West Penn reported that closed sales were up 4.25 percent and total sales dollar volume was up 7.03 percent. The average sales price climbed 2.66 percent year-over-year. The number of new listings increased by 200 homes to 9,311. Those are improving



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metrics but they mask the overall trend of declining listings. Multi-List's total homes listed as of April 30, 2017 was slightly more than 23,000, down dramatically from the 31,000-plus listings on April 30, 2008.

"I just spent the morning in meetings trying to figure it out," replies Howard "Hoddy" Hanna III, CEO of Howard Hanna Real Estate, in response to the question of why there aren't more homes on the market. Hanna leads the region's largest real estate agency – and the nation's third-largest – and he offers three observations that can explain the supply problem.

"There is a lack of new construction so there is not the triggered sale of an existing home behind it. Second, people are staying put, which is hard for us to understand. We can see a price gap in listings from \$150,000 to \$400,000, which means fewer people are moving up. The third factor is that a lot of homes were sold to big private equity firms around the country. We haven't seen those on the market," Hanna summarizes.

The latter factor has had a lesser impact on Pittsburgh's market than in other cities but Pittsburgh's demographics are exacerbating the effect of the lack of new empty-nester homes and affordable first-time houses. And the short supply of both critical segments of the housing market can be traced to the challenges of developing residential property in Pittsburgh.

In the wake of the 2007 mortgage crisis, residential development ground to a halt. Loans for acquisition and development (A & D) stopped while banks worked through toxic residential mortgage portfolios. After the mortgage market returned to a new state of normal, regulations on capital reserves and commercial loans (which is the category in which residential development lending falls) made A & D loans undesirable. That condition has begun to ease nationally but local developers report that lenders are showing less appetite for A & D deals in Pittsburgh.

Then too, the crisis hit small builders, which made up most of the Pittsburgh market, especially hard. This changed the makeup of the market share for builders, leaving more than 50 percent of the homes built for production builders like NVR, the parent of Ryan Homes and Heartland Homes. However, the small size of Pittsburgh's market discouraged other national players from entering the market, leaving Pittsburgh with far fewer home-builders than the market needs.

Add to that the rapidly appreciating cost of raw land and the higher cost of developing in the steep topography of Pittsburgh's remaining developable land, and the recipe for a lot shortage is complete.

"Land prices are just outrageous if you're looking at the desirable areas in the North Hills or along the I-79 corridor," notes Mark Bozzone, owner of Bayberry Development. "A good deal of the money you make in land development is made on the

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price of the land. If you don't make a good deal going in the returns are much lower but the risk is still high."

The maturity of the Pittsburgh market means that the supply of land in desirable locations is smaller. With the steeper topography of the remaining land, developers must consider the higher cost of preparing the lots and extending utilities as part of that cost equation. As developers might have been looking to acquire land to boost the lot inventory in 2009 or 2010, their biggest competition for properties was gas companies rather than other developers. This heightened competition pushed prices beyond what could be economically feasible for new home construction, even though the gas industry was only leasing a limited number of acres. The psychological impact on the sellers was almost universal.

"It only takes one sale and every other land owner thinks that's their number too," says Bozzone.

The development challenge makes it harder to develop the kinds of homes that empty-nesters want. This demographic group generally looks to new construction for its "right-sized" home. Without the new housing options, older Pittsburgh residents are staying put rather than right-sizing. That's a big part of the existing home inventory.

Higher costs are also why it's difficult to develop new construction for first-time buyers, who generally haven't accumulated the equity to afford more expensive homes. With what land and development cost, most new construction starts at \$400,000.

For Pittsburgh's housing market, the combination of a booming population under the age of 35 and growing Millennial home buying demand is a recipe for supply issues to become a supply crisis. If the trend continues, expect there to be opportunities for a housing boom of sorts in places like Bellevue, McKees Rocks or Sharpsburg. Expect also that communities with great school districts will see big increases in prices.

### THE DEMOGRAPHIC SQUEEZE

Metropolitan Pittsburgh's population is aging faster than all but a few cities in the U.S. At the same time, the median age of a City of Pittsburgh resident has plummeted to 32 years old. Because of that, the median age of an Allegheny County resident is declining too, falling while the median U.S. age is climbing. In other words, Pittsburgh's population is growing younger than most cities too. This phenomenon was recently recognized



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by Forbes, which ranked Pittsburgh among the best places for young adults to live. The squeeze in the lower range of housing prices is impacted by both trends.

"There's very little product in that right-size house. That buyer usually wants new construction but there is relatively little of that product in the market," explains Hanna. "We've seen the number of buyers under the age of 35 increase dramatically. Since the first of the year 43 percent of our sales were first-time buyers. All of last year they were 29.5 percent."

*"For a city that is trying to attract younger skilled workers (and succeeding), an extended period of tight supply could impact one of Pittsburgh's biggest advantages: its affordability."*

That trend is playing out in cities around the U.S. Adults between the ages of 20 and 35, the so-called Millennial generation, are the largest demographic cohort ever born. As apartment occupancy rates begin to fall, and as Millennials move into child-rearing years, the stage is set for a significant increase in demand for home buying. How will that play out in Western PA? Pittsburgh was ranked seventh by the Urban Land Institute with an increase of 4,177 (6.6 percent) people between the ages of 25 and 34 from 2010 to 2015. Evidence suggests this trend is accelerating.

Therein lies the problem. Pittsburgh has shed its smoky steel town image and has become an attractive place to live and work for people all over the world. Part of that attraction is the affordability of its housing. Will its popularity ultimately ruin its affordability? **BG**

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# BEST PRACTICE

## Can Pittsburgh Keep the Automated Technology Cluster?

**B**usiness incubators have been an effective way for organizations – be they associations or government entities – to assist and attract startup companies. The concept has been especially effective at promoting the development of industry clusters. Fostering key clusters is a concept, in and of itself, which has been an effective business attraction strategy for Western PA. There is a new industry cluster blooming in Pittsburgh, automation technology, which will require some creative incubating.

It's probably useful to define this cluster. There are three main technologies that tend to get lumped together under the label of automation: robotics, automated vehicles (AV) and artificial intelligence (AI) (or machine learning). While there is cross pollination among the three disciplines, there is separate research infrastructure and distinctly different potential outcomes for each, especially in terms of the built environment that may develop.

The first steps in fostering the growth of the automated vehicle industry have already been taken organically. Carnegie Mellon's research into robotics and machine learning – which goes back almost two decades – has been the magnet that has attracted companies looking to teach cars, trucks, and heavy equipment how to maneuver without a human driver. Over the past two years, as that technology has come very close to commonplace usage, the need for space has exploded and Pittsburgh has become the headquarters for several companies looking to be the leader in automated technology. The challenge for Pittsburgh's civic leaders is to capitalize on this early lead and cement the city's place as the permanent home of the industry, with all the jobs that will attend that. What can be done to ensure that the research and development won't flee Pittsburgh for other pastures?

Don Smith, CEO of the RIDC, has a hare-brained idea about that. Smith, noting that the manufacturers of automated cars need lots of roadway to test their vehicles, suggests that the construction of a large multi-user test track would get the industry's attention. And his idea of large isn't timid.

"If someone were to build a large test track on some of that unused land, that would send the right signal," he says.

RIDC has been the developer thus far of the Almona site in Hazelwood, which is the home of Uber's test track. The facility is designed so Uber can simulate different traffic obstacles and situations to test its software and controls before its cars travel around Pittsburgh. The 42-acre Almona track has its limitations and is proprietary to Uber. Creating a multi-user track would allow for many more scenarios to be created but would be like a multi-tenant office building in its operations. The companies in this business are understandably secretive about their technology and research but Smith believes concern can be accommodated.

"The regional environment is important. In the physical sense, Pittsburgh offers research and development that is close to the talent resources," Smith observes. "But the second attraction could be this test track. If the region went in for it, it would need a pretty big site. We're not talking 50 acres; it's hundreds of acres. The airport would be one place that could work. The Pittsburgh Mills, maybe. I've talked to the entities involved and there are ways to share the resource. That seems like an opportunity that needs to be vetted."

To be clear, the idea of a major multi-user test track has not circulated widely among civic leaders or economic development groups. In fact, the concept was new to the Allegheny County Airport Authority, which has control over one of the sites Smith spit-balled.

"I don't think there are any prohibitions against that but I don't know if the land is zoned properly for it and, because of FAA regulations, we would be required to get market rate for the land," says Bob Kerlick, vice president, media relations for the Allegheny County Airport Authority. "We have a development plan in place but we aren't discriminating about what goes there if it meets the zoning requirements."

A shared test track is an outside-the-box solution to a problem that does exist. The R & D advantage that Pittsburgh has is significant but it's also fleeting. That advantage was the reason Uber Advanced Technologies Group is headquartered here and why Argo AI followed suit. Right behind those two are other AV startups or divisions from Aurora, Delphi, Google, Apple and Tesla. But other major research universities are catching up. There is

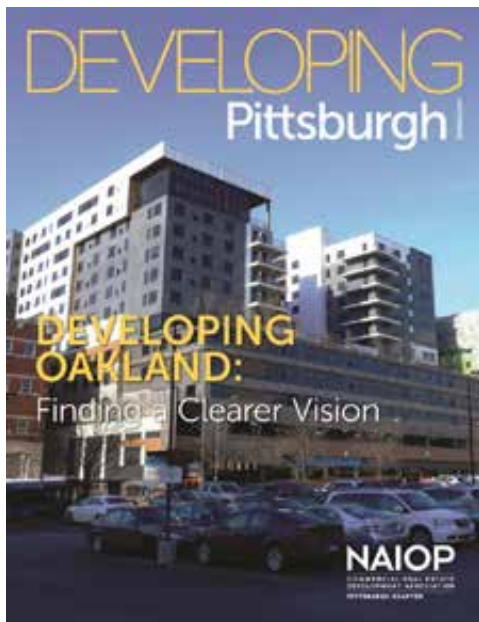
an impressive effort to attract AV manufacturers to Detroit, where there exists a mature automotive infrastructure. And, because of its extended economic travails, Michigan had developed an extensive toolkit of funding to attract industry. Pittsburgh's head start could evaporate in a couple of years.

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"The easiest thing to export is the technology," reminds David Ruppertsberger, president of the Pittsburgh Regional Alliance.

Ruppertsberger, whose organization is the region's business attraction entity, says he has mixed feelings about the viability of Pittsburgh as the AV manufacturing headquarters.

"The place that wins this industry will be the place that offers a total environment. If we could really turn something into a test track that would be helpful. I know Detroit is spending bucks," he acknowledges. "We don't have original equipment manufacturers here. It may be the best we can expect is software engineers – which is great – and maybe some components. The problem with components is they tend not to be separate. I came from the AI world and nobody wants to buy things separately. Do you remember when people used to buy car alarms? Now they want them to be part of the car."

In the broader field of automation, Pittsburgh isn't at such a disadvantage. The National Robotics Engineering Center (NREC) has been researching applied robotics in Lawrenceville for decades. (AV emerged in part from NREC.) Last year, the Advanced Robotics for Manufacturing (ARM) Institute won a \$250 million Department of Defense grant to advance the use of robotics in manufacturing in the U.S. Robotics manufacturers have evolved in Pittsburgh and there is less of a sense of urgency about creating the environment for that industry.

"Right now in the Lawrenceville area there are close to 3,000 people employed in the robotics industry. If you walk around here there are new buildings being built; there are buildings being renovated," observes Jay Douglass, chief operating officer for the ARM Institute. "If Uber and Argo and Aurora do what people think they're going to do those 3,000 people will grow to 6,000 people. There's already a critical mass here. If you do a 500-yard arc upstream and downstream from the 40th Street Bridge there are 20-some companies here. What industries want is a critical mass. That way there's job mobility; there is common interest; there is information sharing."

Douglas points out that Uber's corporate chaos over the past few months had the potential to be a much bigger blow to Pittsburgh than any economic development shortcoming. He also acknowledges that he's charged with making U.S. companies more competitive by using robotics, not attracting companies to Pittsburgh.

The responsibility for business attraction falls to a great degree to the Commonwealth of PA, which has trimmed its efforts, or at least its resources, in recent years. The Republican-controlled legislature has cut funding for the Department of Economic and Community Development (DECD). House Majority Leader Mike Turzai, from Wexford, sponsored the 2013 Debt Relief Bill that curtailed the Redevelopment Capital Assistance Program (RACP) that had been used extensively – to much criticism – under the Rendell Administration. DECD Secretary Dennis Davin believes

*Uber invested tens of millions to create a small test track at Almona.*





that Pennsylvania still has a role to play in fostering new industries like automation.

"First and foremost, we have to ensure that as automated vehicle technologies develop, it's done safely. We also have to be flexible so we remain a national leader in the development and testing of these technologies," says Davin. "The commonwealth is taking this very seriously and actually has an Autonomous Vehicle Policy Task Force, which was convened by PennDOT and of which DCED is a member. These technologies will change mobility as we know it and there is room for many participants in this space in everything from after-market technologies to vehicle manufacturers. But our principal concern is developing a framework under which these technologies are safely and efficiently tested and operated."

Greater Pittsburgh Chamber of Commerce President Matt Smith, a former State Representative, agrees that the Commonwealth can resource measures to attract manufacturers. Smith focused on some of the structural needs of the industry.

"There needs to be continued investment in making sites pad-ready. Further, we should support the place that created the industry," he asserts. "We have such a specialty in that space because of Carnegie Mellon and everything that could leverage that asset should be done."

It may seem that there is undue urgency about the subject but the pace of the emerging technologies demands the attention.

The novelty of the AV, robotics and AI research has a certain science fiction element to it. But the technology is emerging and right quick. The demand for advances in all the technologies is irresistible. Pennsylvania has a less than stellar track record of anticipating the needs of industry and reacting appropriately. The pace of progress is such that these Pittsburgh-centered technologies could be building critical mass in California, Michigan or even Ohio, which is actively marketing itself as the center of the drone industry. Each of those states, among many other, have distinct advantages over Pennsylvania in right-to-work, regulatory ease less-expensive, ready-to-use land. Pittsburgh needs to up its game.

"We need to continue to invest in research and development talent. Yes, it's the talent at CMU but it's also technicians. So it's also the community colleges and technical schools," urges Smith. "It's not just cars. How do we support autonomous technology applied to other vehicles? The supply chain needs to be encouraged and supported."

"The challenge for the region is to identify what the value proposition is and how to get revenue without infringing upon growth," Smith concludes. "Nobody knows what that growth will be but we need to begin to prepare." **BG**

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# INDUSTRY & COMMUNITY NEWS



*Bob Breisinger, Mascaro's vice president of heavy/industrial (at podium), and his family were the Ambassador Family for the March of Dimes 2017 Transportation, Building & Construction awards program on June 7. Bob presented the Mission Moment during the program. The Union Trust Building, constructed by Mascaro, received the Building Project of the Year Award*



*Stantec's George Halkias (left), Mascaro's Alyssa Kunselman and Mike Ellis (right) at the March of Dimes luncheon. Mark Witouski from CH2M is photo-bombing in the back.*



*Blumling & Gusky's Michael Klein (left) and Ross Giorgianni (right) flank MBA Executive Director Jack Ramage at the March of Dimes luncheon.*



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Oxford's Mike Barnard (left) and Alexis McCune Secosky from CMU's School of Architecture (right) with ACE Mentor scholarship winners, Emily Atlin, Michael Swanson, and Elizabeth Falk. Photo by Lindsay Rickel of Poema Photography.



(From left) Mike Barnard and wife Alicia Avick, with Nello Construction's Gene Boyer and fiancé Cherri Silak. Photo by Lindsay Rickel of Poema Photography.



Massaro's Joe Massaro III (left), Alexis Martin and Crystal Schafer (right) congratulate Massaro intern Hayden Bogert for his selection as the Holy Family Academy's Joseph the Worker Scholarship winner.





Rich Yohe from Easley & Rivers (left) with PJ Dick's Kristin and Adam Majcher. Photo by Lindsay Rickel of Poema Photography.



GBA's Teresa Deflitch (left) with Kate Harris and Dr. Mariuth Leftwich from the John Heinz History Center.



(From left) Strada's Eric Phillips, Lainey Phillips from Pieper O'Brien Herr, Desmone's Jeffrey Wessell and Cat Adams from CannonDesign.



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Landau Building Co. hosted a fundraising golf outing for the Passavant Foundation at Allegheny Country Club on May 23. The event attracted 80 golfers. (From left) Jim Wallis from Perspectus Architecture. Deckman's Bill Paul, with Landua's Mike Nehnevajsa, Emory Lukacs & Bethany Sidun.



(From left) Radelet McCarthy Polletta's Julie Polletta, Jim Lopresti from Grove City College, Oxford Development's Tom O'Shaughnessy and Steve Hart from Renick Brothers at the Landau/Passavant Foundation outing.



(From left) Todd Lucas and Mike Swaringen from Schneider Downs and Bill Kristan from Pieper O'Brien Herr Architects.



(From left) George Dobbs from AIMS, St. Clair Hospital's Chuck DiBello, UPMC's Aaron Bernett, and AIM Construction's Mike Tarle.





Kalkreuth Roofing & Sheet Metal held its 11th Annual Kalkreuth Amateur Golf Classic (KAGC) Benefitting Easter Seals was held at Oglebay Resort's Crispin Golf Course on June 10-11. The proceeds from the event contributed a total of \$22,100. Pictured from left are John Kalkreuth, President/ CEO of Kalkreuth Roofing and Sheet Metal; Jay Prager, CEO of The Edouard Ziegler Easter Seal Rehabilitation Center in Wheeling; Marc Kramer from ABC Supply; Kylie, Chris, and Kristen Cox, representative family for Easter Seals; Pat Dunnigan, from Johns Manville; Brian See from Beacon Roofing Supply.



(From left) Chris Clackson of RBC, John Greenling and Jay Triolo of Clifton Larsen Allen and Dan DiPietro of Apex International.



(From left) Matt Dilla with CJL Engineering, Hatzel & Buehler's Amity McClelland and Chris Caltabiano with Shorestein Properties after the CREW/NAIOP Pittsburgh Sporting Clays event at Seven Springs on June 23



(From left) John Wattick, Eric Phillips, Abby Mountain and Joe Wattick from Mosites Construction.

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# AWARDS & CONTRACTS

University of Pittsburgh selected **Turner Construction Co.** as construction manager for its \$3 million renovation to Thackeray Hall. Bostwick Design Group is the architect.

**Turner Construction** is the construction manager for the additions and renovations to Matthews International offices on the North Shore. The architect for the \$15 million project is AE Works.

Pearson Partners awarded **Turner Construction** to contract for lobby and base building renovations to 525 William Penn Place. Perkins Eastman Architects is the architect for the \$8-10 million renovation, which will be the first of a multi-million capital investment.

**Turner Construction** was the successful contractor on the \$2.5 million laboratory fit-out for Perkin Elmer at 250 Industry Drive. The architect for the 21,392 square foot buildout is AE7 Architects.

University of Pittsburgh awarded a \$1.5 million contract to **Volpatt Construction** for the ground floor renovations to its Sutherland Hall dormitory. The architect is Strada Architecture LLC.

**Volpatt Construction** was awarded a \$1.2 million contract by the Baptist Homes Foundation for the multi-purpose room addition at Providence Point in Scott Township. Reese Lower Patrick Scott is the architect.

UPMC awarded **Landau Building Company** a contract for fourth floor pharmacy renovations at Magee Women's Hospital. The \$2 million project involves renovations to 4,250 square feet, including replacement of windows.

**Landau Building Company** was awarded renovations to UPMC Horizon Shenango OR/PERI Anesthesia, located in Farrell, PA. This is a 19,000 square foot, eight-phased project in the active OR, pre/post op areas, waiting rooms, and staff areas. Renovations are expected to finish by November 2018. Avanti Architecture is the architect of record.

**Landau Building Company** has also begun renovations to the UPMC Horizon Shenango Emergency Department Expansion project. Similar to the Horizon OR/PERI Anesthesia project, this is a 7,900 square foot, five-phased renovation to the active department incorporating both daylight and night shift as needed to not interrupt hospital operations. Construction is expected to be completed by March 2018. Image Associates is the architect, and the engineer is FMRW.

**Landau Building Company** will begin the kitchen expansion/renovations to UPMC Cranberry Place. New walk-in units will be added onto the building, and the interior will be upgraded. The project is anticipated to begin July 2017 and be completed by October 2017. The architect is Radelet McCarthy Polletta, and the engineer is FMRW.

The Waldorf School of Pittsburgh awarded **Landau Building Company** a unique and challenging chimney removal and interior

renovation project. The building is a City of Pittsburgh designated Historic Landmark and is also individually listed on the National Register of Historic Places. Pfaffmann + Associates is the architect of record with owner's representation by Energy Assurance Solutions.

**Landau Building Company** was awarded the WVU Medicine Servery renovation project in Morgantown, WV. Work includes five platforms, a beverage area, check-out area, and a reconfigured soda and utility room. Renovations are expected to be completed by September 2017. IKM is the architect.

**TEDCO Construction** was the successful contractor on the University of Pittsburgh's \$715,000 Scaife Hall second floor office renovation for UPMC. The project's architect is Moshier Studio.

West Allegheny School District awarded a \$3.4 million contract to **Yarborough Development** for the general construction portion of the \$5 million addition and alterations to West Allegheny High School. The architect for the project is Hayes Design Group.

**Mosites Construction** was selected as contractor for the Lumiere Residences, a 70-unit, \$35 million condominium being developed by Millcraft Investments and McKnight Realty at the former Saks Fifth Avenue site at 350 Oliver Avenue. The architect for the seven-story structure is Indovina Associates Architects.

**Nello Construction Co.** has started construction on the new Audi dealership for #1 Cochran Motors at 25th & Liberty Avenue in the Strip District. The architect for the 19,000 square foot new facility is Nudell Architects. Nello also started construction on a 15,600 square foot Subaru facility for #1 Cochran in Monroeville.

Impact Christian Church selected **Nello Construction Co.** as contractor for its new facility in Moon Township. The project involves conversion of approximately 49,000 square feet of the former Airport Ice Arena at 350 Hookstown Grade Road. The architect is RSSC Architecture.

The University of Pittsburgh awarded a contract to **Facility Support Services** for the renovations to Clapp Hall Hatful Lab Third Floor. The architect is BBH Design.

**Facility Support Services** completed the tenant space improvements for Millie's Ice Cream at Millcraft Investment's Tower Two-Sixty in Market Square. DeNinno Architects designed the space.

**Mascaro** received notice from the Children's Museum of Pittsburgh to proceed with preconstruction services for the expansion of the museum into the former Carnegie Library – Allegheny Branch. Mascaro will be working closely with the museum, PWWG Architects, and Koning Eizenberg Architecture.

**Mascaro** received a construction management contract from PNC Financial Services Group. The scope of work will encom-

# AWARDS & CONTRACTS

pass renovation of multiple floors at Two PNC, and is expected to finish by summer 2018.

The University of Pittsburgh awarded a construction management contract to **Mascaro's Client Services Group** to begin work on Phase 2 of the Chevron Optics Lab renovation.

**Mascaro's Client Services Group** received a contract from PNC

for the fast-track fitout of the 3,000-square-foot Numo Technology Incubator Pilot project. Space includes custom baffle wood ceilings, glass walls, access flooring, and custom wood furnishings along with mechanical and electrical upgrades.

**Rycon Construction** was awarded the Capuchin Friars \$10 million, 55,000 square foot new residence and assembly building in Lawrenceville. The architect is Brenenborg Brown Group.

DDR Corp. selected **Rycon's Building Group** to complete a 46,000 square foot tenant build-out for a new Marshalls-HomeGoods store at Kenwood Square shopping plaza in Cincinnati. Target completion is set for early September 2017.

LRC Realty awarded **Rycon's Building Group** a third phase of retail improvements at The Block Northway. The scope includes a large building addition housing several tenants.

Two JCPenney Sephora renovations are simultaneously in progress at Ross Park Mall and Westmoreland Mall by **Rycon's Special Projects Group**.

At Penn State University's Beaver Campus work is currently underway to Broadhead Bistro by **Rycon's Special Projects Group**. The scope includes upgrades to the 8,000 square foot kitchen area. Work is scheduled for completion during the summer recess.

**Rycon's Special Projects Group** is remodeling a Giant Eagle in the Eastgate Plaza in Greensburg to add an 8,300 square foot wine and beer section.

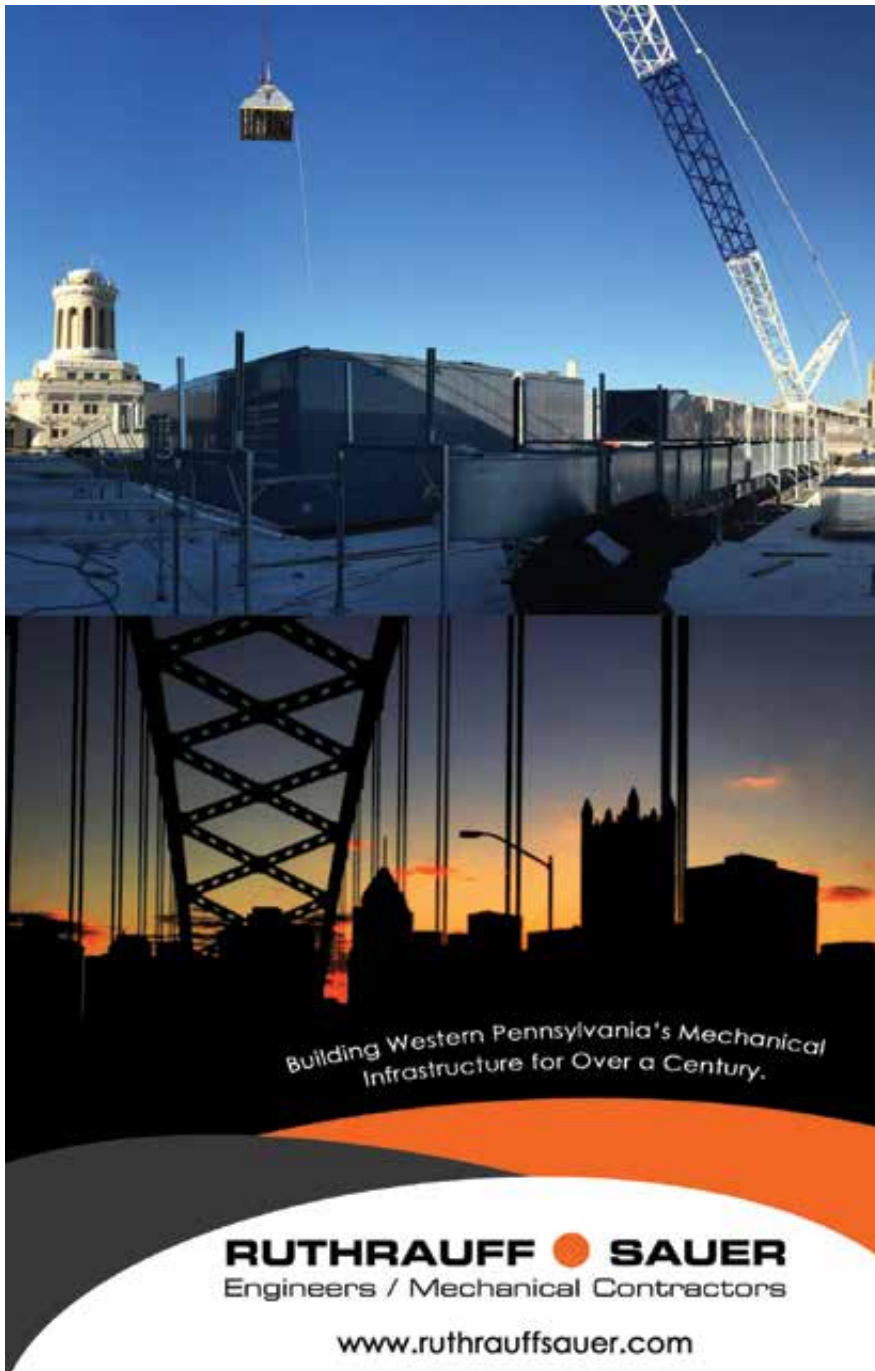
**Rycon's Special Projects** team is currently upgrading Pitt-Ohio's corporate office space. The 13,000 square foot project was designed by Strada.

Newmark Grubb Knight Frank selected **Rycon** for a \$2.5 million construction manager contract to fit-out a new location for Industrious, a co-working office space, on the 19th floor of the Bank of America building in downtown Nashville.

**Rycon** will soon begin retail work on Love's Travel Shops & Country Stops in Fair Play, South Carolina.

Humana, a medical insurance provider, selected **Rycon** to complete nearly \$1 million of work to two of their Florida locations. One project is office improvements while the other is a medical build-out for MetCare.

**AIM Construction** was awarded an \$8 million contract for the renovations to the sixth floor operat-



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# AWARDS & CONTRACTS

ing rooms at Butler Memorial Hospital. Design Group Architects is the architect for the project, which will start in the fall of 2017.

St. Clair Hospital selected **PJ Dick Inc.** as construction manager for its \$80 million expansion in Mt. Lebanon and Scott Township. PJ Dick will perform preconstruction services while IKM Inc. completes the design throughout the rest of 2017.

Zamagias Properties selected **PJ Dick** as contractor for its 26-unit Sewickley Lofts condominiums, a two-building, \$6 million project located on Centennial Avenue between Blackburn Road and Locust Place in the village. The architect is JMAC Architecture.

Ruth's Chris Steak House awarded a contract for its expansion at 2 PPG Place to **A. Martini & Company**.

**Allegheny Construction Group** was the successful contractor on the Frick Fine Arts Gallery renovation at the University of Pittsburgh. The architect is MacLachlan Cornelius & Filoni.

University of Pittsburgh also awarded a contract to **Allegheny Construction Group** for its print shop relocation at 7500 Thomas Boulevard in Homewood. RSH Architects designed the project.

Desmone Architects selected **Jendoco Construction Corp.** as contractor for the addition to its historic Doughboy Square office. The project, called Doughboy Square II, is a 17,400 square foot addition that will include space for Desmone and tenants. Construction should begin in September.

**Jendoco Construction** is doing renovations to the counseling center at Central Catholic High School in Oakland. The architect for the \$1 million project is inter\*ARCHITECTURE.

Elmhurst Selected **Burchick Construction** as contractor for the renovation and expansion of its 135 Jamison Lane property for Bechtel Plant Machinery Inc. in Monroeville. The \$28 million project includes a new 600-car parking lot, 90,000 square feet of new construction and renovation to 179,000 square feet. Desmone Architects is the architect.

**Burchick Construction** was the successful contractor for the University of Pittsburgh's renovation of Lothrop Hall. Radelet McCarthy Polletta Architects designed the project.

**Specified Systems Inc.** has been recognized by U.S. Glass magazine and Glass Magazine as one of the top glazing contractors in the country for 2016.

U.S. Glass named Specified Systems one of its "Top Contract Glaziers" for the fourth time since 2012 and Glass Magazine honored them as a "Top 50 Glaziers" for the seventh consecutive year.

Franklin Regional School District selected **Massaro Construction Management Services** as construction manager on its \$54 million elementary school campus. The project involves renovations to Sloan Elementary and a new upper elementary school. The architect is VEBH Architects.



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# FACES & NEW PLACES

**Laura Oblinger** joined **Mascaro** on June 14 as an administrative assistant. She brings over 20 years of experience in the real estate, architecture, and construction markets.

**John Anthony Mascaro**, a recent graduate of Carnegie Mellon University, officially joined **Mascaro** on June 5 after several internships at the company. As project engineer, John will be the third generation of Mascaro family in the business.

On June 5, **Bill Keith** became a member of the **Mascaro** team as a director of client development. Bill has 28 years of construction experience that includes marketing, business development, project management, and estimating.

Proposal Manager **Kristina Falvo** became a member of **Mascaro's** marketing team on May 22. Her previous positions include graphic designer for a photography studio and marketing coordinator for an architectural firm. Kristina is a 2007 graduate of La Roche College.

Project Engineer **Brian DeRuschi**, joined **Rycon's Building Group**. He graduated from the University of Pittsburgh with dual degrees in Civil and Environmental Engineering.

**Eric Danko** has been hired as a project engineer assisting **Rycon's** self-perform operations. Eric earned a bachelor's degree in Civil Engineering and a master's degree in Construction Management from the University of Pittsburgh.

Senior Project Manager **Gary Staso** joined **Rycon's Special Projects Group**. Gary received a Mechanical Drafting degree from Greensburg Technology Institute and has over 35 years' experience.

**Jim Froehlich** rejoined **Rycon** as operations manager in the Special Projects Group. Jim attended Penn State University and has 20 years' relevant experience.

Project manager **John Casciato** has been added to **Rycon's Casework & Millwork Division**. John brings over 35 years' construction industry experience to the team.

**Rycon** Cleveland hired experienced estimator **Peter Wielicki**. He has 30 years' construction industry experience.

**Rycon's Casework & Millwork Division** recently added **Ryan Young** as a CNC programmer. Ryan holds an associate's degree in CNC Programming & Operating.

In **Rycon's Building Group**, **April Austin** was promoted from project engineer to assistant project manager.

**Dena DiVirgilio's** role in **Rycon's** accounting department has advanced to accounts payable supervisor.

Also at **Rycon**, **Kevin Ahrens** was promoted from operations manager of Pittsburgh's Special Projects Group to vice presi-

dent of the Atlanta Division. This role was created in response to the steady growth of work at the Atlanta office.

**Harwood Hoskins** joined **dck worldwide** as a project development specialist. Hoskins started at dck in early May as part of the business development team.

**Hatzel & Buehler Inc.** announced the appointment of **John Java** to vice president and general manager of its Pittsburgh office. Java holds a bachelor's degree in Electrical and Electronics Engineering from Penn State University. He joined Hatzel & Buehler as operations manager in September 2016.

**Hatzel and Buehler's** Pittsburgh office announced the hiring of **Michael Brown** as an electrical estimator. Brown holds a bachelor's and master's degree in Architectural Engineering from Penn State.

**Dave Daquelente** has been hired as the new executive director of the **Ironworkers Employers Association**, replacing Bill Ligetti, who has retired. Daquelente most recently worked with Mobile Medical Corporation.

**Michael Baker International** announced that **H. Daniel Cessna**, P.E., has joined the firm as senior vice president and Pennsylvania Headquarters regional director. In his new role, Cessna will oversee all engineering, business, marketing and financial operations related to the firm's Allentown, Fort Washington, Harrisburg, Middletown, Moon Township and Philadelphia offices. Cessna brings 24 years of industry experience in transportation planning, design, construction management, asset planning and management, and public involvement to his new role. During the last 12 years, he served as the Pennsylvania Department of Transportation's (PennDOT) District Executive for District 11, serving the Pittsburgh metro region.

**Mandy Ormsby** has joined **Massaro Corporation** as marketing coordinator. She earned a degree in public relations from Waynesburg University. She joins Massaro after working for Scott Electric in its marketing department, preparing proposals and bids.

**Thomas Tresky** has joined **PJ Dick** as a Project Engineer working in our Estimating Department. Thomas recently graduated from the University of Pittsburgh with a Bachelor of Science in Civil Engineering. Thomas was an intern with PJ Dick in 2016 working in our Self-Perform Group.

**Zach Murzynski** has joined **PJ Dick** as a field engineer working on our Erie Office Building Complex Project. Zach recently graduated from the Pennsylvania College of Technology with a Bachelor of Science in construction management. Zach was an intern with PJ Dick in 2016 working on our University of Pittsburgh GSPH Parran & Crabtree Hall Renovation Project.





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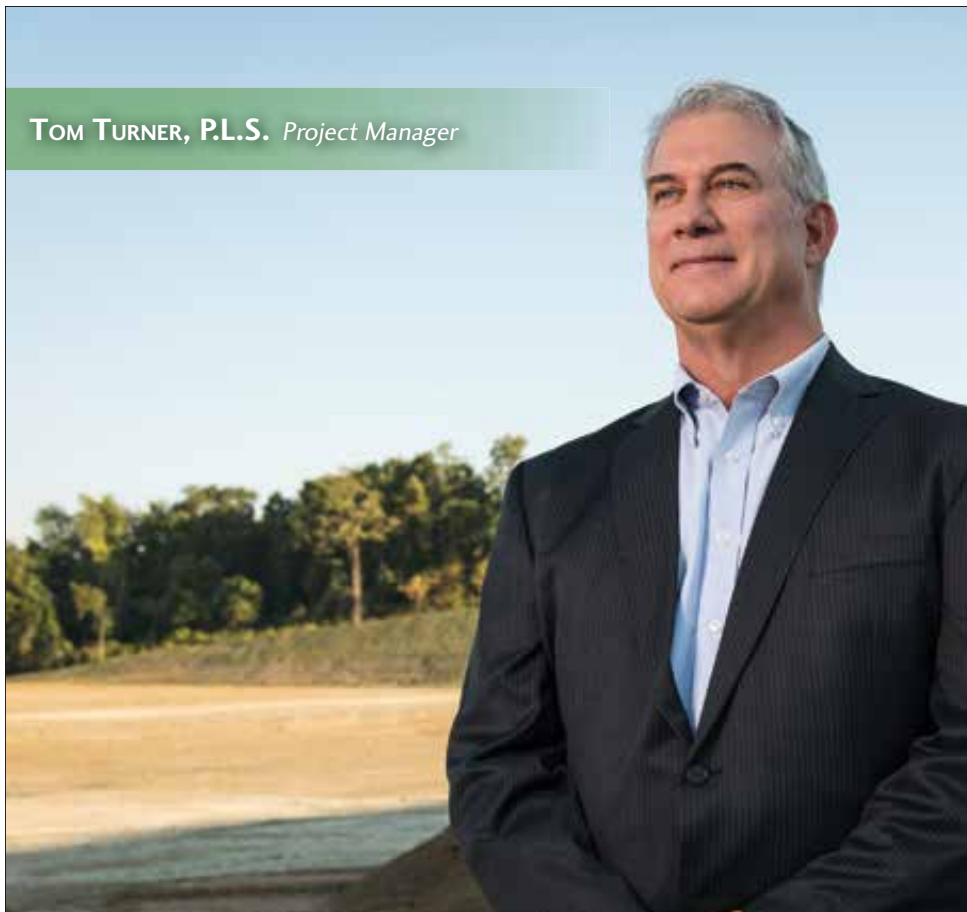


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# FACES & NEW PLACES

**Casey McAndrew** has joined **PJ Dick** as a project engineer working on our Cool Springs Assisted Living Project. Casey recently graduated from Robert Morris University with a Bachelors of Science in engineering and a Masters of Science in engineering management. Casey was an intern with PJ Dick in 2016 in the estimating department.

**Josh Matthews** has joined **PJ Dick** as an assistant project manager working on our Pitt Bradford Campus Projects. Josh has a Bachelors of Science from Penn State University and has over 8 years experience in the construction industry with an emphasis on field management.

Working for **PJ Dick** as interns for summer 2016 are: **Thomas Bruno, Richard Buechel, Stephen Covelli, Jillian Foster, John Gergel, Coby Green, Nicholas Hayes, Mitchell Higgins, Emily Hofmeister, Jacob Kleindl, Sarah Mahler, Graham McConnell, Alec Miklos, Alex Moxie, Andrew Scherbarth,** and **Nathan Steinhauer.**

**Civil & Environmental Consultants, Inc.** recently hired **John E. Coyne, P.E., P.L.S.,** as a principal in the Civil Engineering practice of the firm's Pittsburgh headquarters office. Prior to joining CEC, Coyne was the director of engineering and construction for the City of Pittsburgh's Urban Redevelopment Authority from 1994 to 2008. He later worked in the private sector as an engineering consultant. Coyne earned a Bachelor of Science in civil engineering from the University of Pittsburgh and an MBA from Point Park University. He is a member of the American Society of Civil Engineers, the American Society of Highway Engineers, the Engineers' Society of Western PA, and NAIOP.

**Carl Heinlein, CSP, ARM, CRIS,** senior safety consultant at **American Contractors Insurance Group** has been elected to the board of directors of the American Society of Safety Engineers. Heinlein has received the Distinguished Service to Safety Award from the National Safety Council and is a Fellow of the American Industrial Hygiene Association.



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M. Dean Mosites, Past President  
Mosites Construction Company

Clifford R. Rowe, Jr.  
P.J. Dick Incorporated  
Glenn Sieber (MICA President)  
Easley & Rivers, Inc.

## GENERAL CONTRACTORS

AIM Construction, Inc.  
Allegheny Construction Group, Inc.  
A. Betler Construction, Inc.  
Burchick Construction Company, Inc.  
F.J. Busse Company, Inc.  
dck worldwide, LLC  
DiMarco Construction Co., Inc.  
Dick Building Company  
P.J. Dick Incorporated  
Facility Support Services, LLC  
FMS Construction Company  
Independence Excavating, Inc.  
Jendoco Construction Corporation  
Landau Building Company  
A. Martini & Co.  
Mascaro Construction Company, L.P.  
Massaro Corporation  
McCrossin  
Menard USA  
Michael Baker Jr., Inc. Construction Services Group  
Mosites Construction Company  
Nello Construction Company  
Nicholson Construction Company  
RBVetCo, LLC  
RJS Construction Consulting, LLC  
Rycon Construction, Inc.  
Spartan Construction Services, Inc.  
Stevens Engineers & Constructors, Inc.  
TEDCO Construction Corporation  
Turner Construction Company

Uhl Construction Company, Inc.  
Volpatt Construction Corporation  
Yarborough Development, Inc.

## SPECIALTY CONTRACTORS

A.C. Dellovade, Inc.  
A Crane Rental, LLC  
A. Folino Construction, Inc.  
ABMECH Inc.  
Advantage Steel & Construction, LLC  
Alliance Drywall Interiors, Inc.  
Amelie Construction & Supply, LLC  
Amthor Steel, Inc.  
Bova Corporation  
Brayman Construction Corporation  
Bristol Environmental, Inc.  
Bruce-Merrilees Electric Co.  
Century Steel Erectors Co., LP  
Clista Electric, Inc.  
Cost Company  
Cuddy Roofing Company, Inc.  
D-M Products, Inc.  
Dagostino Electronic Services, Inc.  
Donley's Concrete Group  
Douglass Pile Company, Inc.  
Easley & Rivers, Inc.  
Joseph B. Fay Company  
Ferry Electric Company  
William A. Fischer Carpet Company  
Flooring Contractors of Pittsburgh  
Franco Associates  
Fuellgraf Electric Company  
Gaven Industries, Inc.  
Giffin Interior & Fixture, Inc.  
Richard Goettle, Inc.  
Graciano Corporation  
Gunning, Inc.  
Hanlon Electric Company  
Harris Masonry, Inc.  
Hatzel & Buehler Inc.  
HOFF Enterprises, Inc.  
Howard Concrete Pumping, Inc.  
J. J. Morris & Sons, Inc.  
Kalkreuth Roofing & Sheet Metal, Inc.  
Keystone Electrical Systems, Inc.  
G. Kidd Inc.  
Kirby Electric, Inc.  
Kusler Masonry, Inc.  
L & E Concrete Pumping Inc.  
Lighthouse Electric Company, Inc.  
Limbach Company, LLC  
Marsa, Inc.  
Massaro Industries, Inc.  
Master Woodcraft Corporation  
Matcon Diamond, Inc.  
Maxim Crane Works, LP  
McCrossin Foundations, LLC  
McKamish, Inc.  
McKinney Drilling Company  
Mele & Mele & Sons, Inc.  
Minnotte Contracting Corporation  
Moretrench American Corporation  
Nathan Contracting LP  
Noralco Corporation  
Paramount Flooring Associates, Inc.

Phoenix Roofing Inc.  
Pittsburgh Interior Systems, Inc.  
Precision Environmental Company  
RAM Acoustical Corporation  
Renick Brothers Construction Co.  
Ruthrauff | Sauer LLC  
Sargent Electric Company  
Scalise Industries Corporation  
Schnabel Foundation Company  
Specified Systems, Inc.  
Spectrum Environmental, Inc.  
SSM Industries, Inc.  
Swank Construction Company, LLC  
T. D. Patrinos Painting & Contracting Company  
A. J. Vater & Company, Inc.  
W.G. Tomko, Inc.  
Wayne Crouse, Inc.  
Winjen Corporation  
Wyatt, Incorporated

## AFFILIATE MEMBERS

4CTechnologies  
AE Works Ltd.  
AEC Online Store LLC  
All Crane Rental of Pennsylvania, LLC  
Alliant  
American Contractors Insurance Group  
AmeriServ Trust and Financial Services Company  
AON Risk Services, Inc.  
Arnett Carbis Toothman, LLP  
Arthur J. Gallagher Risk Management Services, Inc.  
Ascinsure  
Automated Logic Corporation  
Babst | Calland  
Baker Tilly Virchow Krause, LLP  
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Burns & Scalo  
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Chubb Group of Insurance Companies  
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Culligan of Sewickley  
DesignGroup  
Dickie, McCamey & Chilcote, PC  
Dingess, Foster, Luciana, Davidson & Chleboski LLP  
Dollar Bank  
Eckert Seamans Cherin & Mellott  
ECS Mid Atlantic, LLC  
84 Lumber  
Enterprise Fleet Management  
FDR Safety, LLC

Foundation Building Materials  
Galloway Safety & Supply  
Henderson Brothers, Inc.  
Henry Rossi & Co., LLP  
Hill, Barth & King, LLC  
Highway Equipment Company  
Howick, LTD.  
Huntington Insurance, Inc.  
Huth Technologies LLC  
Joe Safety  
Karpinski Engineering  
Langan Engineering & Environmental Services  
Liberty Insurance Agency  
Liberty Mutual Surety  
Lytle EAP Partners/Lytle Testing Services, Inc.  
m/design  
Maiello, Brungo & Maiello  
Marsh  
Meyer, Unkovic & Scott LLP  
Mobile Medical Corporation  
NCI - Nursing Corps  
Ohio Valley Drywall Supply  
Picadio Sneath Miller & Norton, P.C.  
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Scotti Law Group  
Seubert & Associates, Inc.  
Steptoe and Johnson PLLC  
Tarax Service Systems, Inc.  
The Gateway Engineers, Inc.  
The HDH Group, Inc.  
The Rhodes Group  
Tioga HVAC Rentals  
Tom Brown, Inc.  
Travelers Bond & Financial Products  
Tucker Arensberg, P.C.  
UPMC Work Partners  
VEBH Architects, PC  
Veka, Inc.  
Wells Fargo Insurance Services  
Wilke & Associates, LLP  
Willis of Pennsylvania, Inc.  
Zurich NA Construction

# CLOSING OUT

BY PETRA MITCHELL

**T**he last two decades have been challenging for American manufacturers. Tough foreign competition led to a decline among many industries that had been dominated by American manufacturers the century before. Talk began to turn to themes of the United States as a service economy and many planners began looking at a future with manufacturing as an insignificant piece of our national fabric.

Fortunately, the manufacturing companies that have transitioned through this period became stronger. Manufacturing not only survived, but is thriving. Today, many view manufacturing as the engine to pull our economy back to dynamic prosperity.

This is no more evident than here in southwestern Pennsylvania, where our region has been the center of important manufacturing news. Marcellus Shale is literally right under our feet, creating new local manufacturing opportunities. When completed, the Shell cracker plant in Beaver County will produce the petrochemical building blocks that are a primary material used by manufacturers of plastic goods, medicine and cosmetics. This local supply means that transportation costs will be much lower for our region's manufacturing companies.

In July 2015, the U.S. Economic Development Agency awarded the Pittsburgh region a designation under the Investing in Manufacturing Communities Partnership (IMCP), making it one of 24 regions to receive unique federal support for long-term economic development growth in regional manufacturing. The IMCP designation identifies the strength of our metals manufacturing industry. This includes steel production that draws on our rich history as the steel producer but it also refers to any industry that uses metals and advanced materials in its manufacturing process.

The strong reputation of Pittsburgh across the nation has led to new in-

vestment and expansion. The federal government is investing in this region through the Manufacturing USA program. Manufacturing USA establishes institutes in communities through public-private partnerships with distinct technology focus areas. In 2012, the tristate region was awarded a \$30 million grant to manage the first of these institutes, America Makes in Youngstown, Ohio. America Makes focuses on additive manufacturing technologies. Just this year, the Advanced Robotics for Manufacturing (ARM) Institute was announced for Pittsburgh with a focus on robotics in manufacturing. These institutes bring together organizations from industry, academia, government, and economic development to work together to increase global manufacturing competitiveness. These institutes have the potential to provide local manufacturers with valuable tools to innovate and grow.

A renowned presence of research universities, including Carnegie Mellon University and the University of Pittsburgh, brings new ideas, innovation and patents to this region. This often leads to entrepreneurs and new companies that spin out from the university system. The Fortune 500 companies want to be part of this intellectual marketplace. Firms like Google, and Uber have set up offices here. GE's Center for Additive Technology Advancement opened a manufacturing facility to make aerospace parts using additive manufacturing.

The 2016 Manufacturing Scorecard published by Catalyst Connection and the Pittsburgh Regional Alliance identifies the following facts about the Greater Pittsburgh area:

- Manufacturing is the third largest industry in terms of gross regional product (\$13.7 billion).
- 93,635 people work in manufacturing and these employees support 375,000 additional jobs either directly or indirectly.



*Petra Mitchell*

- 63 manufacturing companies announced expansions that are expected to create 990 new jobs.

Our organization, Catalyst Connection, has supported small manufacturers for nearly 30 years. A southwestern Pennsylvania economic development organization, we are funded in part by state and federal governments, to help our region's manufacturers develop and implement the tools necessary to find new customers and remain competitive.

We work with our clients on innovative digital marketing strategies and help commercialize new products by working with technical experts in universities and laboratories. We help companies implement lean manufacturing to reduce costs and develop their talent by investing in professional development for their workforce. Like manufacturing itself, we adapt to the needs of our clients.

Manufacturing is driving economic growth in our region and our nation, and keeps America a strong global player. **BG**

*Petra Mitchell is President and CEO of Catalyst Connection.*



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