Breaking Ground

THE MAGAZINE OF THE MASTER BUILDERS' ASSOCIATION OF WESTERN PENNSYLVANIA

SEPTEMBER/OCTOBER 2014

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Publisher's Note

I confess that if I don't write the words "Marcellus" or "Utica" again for a while it will be alright with me. Don't misunderstand, I don't think this whole gas business is overhyped or going away as some skeptics do; it's just that it feels like I have been writing about natural gas exploration and its impact on the region's economy forever.

In part that's because I've only been doing this whole writing for a living thing since around this time in 2006. By coincidence, it was only a year or so after we began publishing *BreakingGround* that I first heard about this amazing uptick in well drilling in the southwestern corner of Pennsylvania. So it kind of feels like the gas business has been topic one since day one.

BreakingGround looked smart by being an early reporter about the shale exploration. At this point, I'm happy to have anyone who remembers our articles from 2008 and 2009 give me credit for being visionary (actually I'm happy to find anyone who can remember our articles from 2008 or 2009). The truth is somewhat less flattering. My introduction to the industry came from a friend, Chris Schweiger, who works for a stone company called Laurel Aggregates. His business had shifted dramatically throughout 2008 from supporting asphalt paving and concrete construction to supplying stone to well sites. As he developed relationships with the drillers, Chris heard tales of how large the shale formations were in PA and the boom that would follow the exploration.

Knowing what I did for a living, Chris suggested that I might want to check into this Marcellus Shale story because it was going to be the next big thing. Of course, what I discovered over the next few years was that the gas business was going to change the economy in our corner of the world in a significant way. Five years, millions of square feet and billions of dollars in capital spending later, Schweiger's prediction proved to be correct.

One of the recurring cautionary notes that I heard from the executives involved in the gas industry in those first couple years of the build-up in production was that the gas business had a longer horizon than most industries. The talk was of a 50 or 100-year play in Pennsylvania and the executives urged patience in talking about how the business would develop. This was especially true when the execs spoke of the downstream build-out that would follow exploration and separation over time.

As we impatiently await a decision to proceed with the ethane cracker that Royal Dutch Shell has proposed, I more fully understand what those people were trying to communicate back in 2009 and 2010. Apparently, you take your time about decisions to spend $5 billion.
For people who write about what is going on and get to call it news, patience in not a virtue. While waiting for the glacial pace of decision-making to take place, news media still need something to talk about. As a result, news consumers have been fairly well inundated with stories about the gas industry long past the point of any of it being news. Newspapers have re-arranged themselves to be energy-centric. Industry events abound. There is still no better way to draw a few hundred people to a networking event than to put the word Marcellus in the announcement.

It's a relief to me then that a clearer vision of the post-cracker Western PA is starting to emerge. Our feature in this edition will certainly not ignore the gas industry. After all, there are still billions being invested in pipelines and compressor stations – let alone wells. What all this energy sitting beneath us means is that the kinds of jobs that civic leaders have been seeking for a generation are returning. Manufacturing is coming back to America and to Pittsburgh it seems. What attracted industry to the three rivers in the first place is a draw again.

So I am not actually trying to avoid discussion of the Marcellus Shale play, even if there isn't as much fun writing about what everyone else is writing. The fun in this kind of business is in identifying the trends that are emerging or influential. Natural gas is no longer the new thing but it is still the next big thing.

Jeff Burd

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REGIONAL MARKET UPDATE

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The word that seems to describe the construction market in metropolitan Pittsburgh in Fall 2014 is pregnant. Most architects and engineers have backlogs of work in design and more in pre-design, although the pace of proposals slowed at summer's end. Supply and demand fundamentals are skewed strongly in favor of demand, with little supply in any category of property. The market is pregnant with opportunity but the gestation period has gone beyond that of the elephant.

At the end of the day, the lack of construction stems from lingering constraints on owners, both real and perceived constraints that are limiting starts. Within two months of mid-term Federal elections that could change the balance of power in Washington, DC or in the Commonwealth's Governor's mansion, there should be little that loosens the constraints.

In the private sector, there is still a disconnection between corporate earnings and the usual corresponding investment patterns. With the overall economy clearly growing at a healthy rate again – albeit still not at the rate that typically accompanies post-recession expansion – it seems that the likely explanation for the tepid corporate spending is the uncertainty about the regulatory and tax environment. While few of the changes that the Obama administration claimed a mandate to implement have come to pass, the one major program – healthcare reform – remains a mystery as to its ultimate cost to business.

Business leaders are bright and observant as a rule, so it's also likely that corporate executives see that a number of the disinvested government capital programs – infrastructure and education primary among them – can't simply be eliminated. Roads, bridges, schools and all public structures require maintenance and occasional expansion. Paying for prudent maintenance of the infrastructure out of current accounts is almost impossible, so the specter of higher taxes looms. And with the leading candidate for governor hinting at higher taxes, the vision of a potentially higher tax environment may become reality sooner than later.

Whether the threat of higher taxes and healthcare costs are the reasons why financially healthy corporations are spending less on capital improvements is pure speculation. It may just be owners are more cautious in the wake of the financial crisis of 2008. Whatever the reason, an unduly conservative sentiment is keeping the amount of commercial construction well below what should be expected given the extraordinarily tight space conditions.

For their part, commercial real estate developers are active in metro Pittsburgh. As of September 1, there were 728,000 square feet of new office space under construction (excluding the Tower at PNC Plaza); 866,000 square feet of new hotels; 636,000 square feet of industrial buildings; 637,000 square feet of retail and 1.16 million square feet of multifamily apartments. That compares to 550,000 square feet of medical buildings and 170,000 square feet of K-12 school buildings under construction. But while that much commercial construction should begin to bring relief to the record low vacancy rates – and give users more options and more construction projects – the majority of all that space will be occupied by owners.

Tenants need a certain amount of vacant options to allow for relocation and expansion. With single-digit vacancy rates, the commercial markets have been self-restricting over the past 24-36 months. It is hoped that the renovations of 500,000 square feet at the Union Trust Building, the 170,000 square feet of the Gardens project and the new construction at Southpointe II of 150,000 and 120,000 square feet from Burns & Scalo and Horizon Properties respectively, will provide the needed relief valves for office users to implement business plans.

There are, unfortunately, no such relief valves in sight for the industrial construction market. A more imminent decision about construction of the ethane cracker may be the nearest hope for an industrial catalyst.

For all the corporate uncertainty, it is the lack of hospital and educational construction that has been the biggest hole in the market.

Hospitals have been hit with a triple whammy of lower reimbursements, declining visits and fewer research grants. In Western PA, you can add the ongoing competitive rebalancing that is resulting from the expiring agreement between Highmark and UPMC to the pressures facing healthcare systems. As was announced earlier this year, both the healthcare giants in Pittsburgh reduced their planned capital expenditures to roughly $250 million. If the first quarter of each system's fiscal year is any indication, far less than that annual amount will be spent in calendar year 2014.

Of the hospital or other medical space under construction, one-third of the total square footage is from the nearly completed Highmark Wexford Medical Mall. The impending opening of that facility marks a shift in the healthcare delivery model that is rippling out into the market. Quite literally, the Wexford project has sparked construction of at least two 40,000 square foot medical buildings within 100 yards of the Medical Mall's entrance but the industry trend that the Highmark project represents is appearing elsewhere in the region.

Excela's on-again, off-again plans for roughly $50 million in an outpatient and medical office building in Greensburg and Latrobe appear to be moving forward, although construction is unlikely until 2015. UPMC has taken proposals for construction of a new $20 million medical office building at its Altoona Hospital campus. PJ Dick has started construction of a 12,000 square foot outpatient facility for Conemaugh Hospital in Meyersdale. Butler Health System has interviewed contractors for construction of a $15 million medical office at the Butler Memorial Hospital. All of these facilities, and those at St. Clair and Jefferson Regional recently completed, are taking advantage of the shift in reimbursement preferences to drive patients towards less expensive, more efficient and convenient buildings for healthcare delivery.

Major projects like the Shadyside Hospital patient tower renovation, the Center for Innovative Sciences, expansions at St. Margaret's, Magee and Passavant Hospitals have been shelved until there is more clarity about the healthcare landscape. The same is true for much of the proposed modernization of the Allegheny Health Network's urban hospitals.

The education sector of the market has been even gloomier than healthcare thus far in 2014, although the signs from both private and public schools are improving.

With the passage – or non-veto – of the Commonwealth's 2014-2015 fiscal budget, the legislature lifted the moratorium on reimbursements for schools with projects in the PlanCon pipeline. The immediate impact of the moratorium's end, which was accompanied by an increase of $10 million and the release of $73 million in reserves, will be to reimburse a number of school districts with projects under construction or completed. Districts with projects in various stages of planning will not see material impact immediately, but the lifting of the ban has been the catalyst for an increase in projects submitted into the pipeline for future construction.

For public higher education, there were no additional goodies in the budget but the continuation of the $65 million in PASSHE's capital expenditures in 2014-2015 allows the State System to move beyond the burden that the Rendell administration put on PASSHE by doubling its expenditures in its final years. With the full $65 million available for investment in the coming year, expect more projects at state universities.

Private universities have recovered from the endowment and giving declines that accompanied the last recession. The most active owner at the moment is Carnegie Mellon University with its $90 million Scott Hall and $20 million Cohon Student Center under construction and the early site packages of the $100 million Tepper School of Business planned for 2015. Down the street, the University of Pittsburgh continues to spend significantly less on projects other than those assigned from the Department of General Services. The steep decline in Federal research grants has hit Pitt the hardest among the region's colleges.

Construction activity at the smaller universities and colleges in the region has been higher than during the recession. Looking forward to 2015, construction is expected for the $15 million recreation building at Washington & Jefferson, the $6.5 million School of Nursing at Robert Morris and the $35 million Rockwell Hall phase of Grove City College's STEM complex.

One upbeat place for educational construction is Penn State. PSU has identified a long list of ten design/build teams for the $173 million East Halls renovation and new residence hall. Short lists have been decided for the $21 million Findlay Dining Commons and the $30 million North Residence Hall projects. The university is also asking for qualifications for a $30 million Agriculture Engineering Building to be delivered as an integrated project. PSU selected Stantec to design a $17 million student union at its Brandywine campus, as well as design/build teams for $70 million in new residence halls at Brandywine and Abington. And Penn State has earmarked some $380 million in capital projects at Hershey Medical over the next five years.

Through the first nine months of 2014, contracting volume has slipped well below the levels seen in 2013. Non-residential contracting totaled just under $1.7 billion through August 31, significantly less than was forecasted. Housing construction continues to lag 2013 by more than 15 percent.

Heading into the fourth quarter, any residual impact of the severe winter weather has been worked through so that the anemic construction totals are a reflection of soft demand rather than delayed mobilization or slower shopping. Except for the continued strength of the multi-family market, contracting volume has been lower than expected. Leading indicators suggest that the fourth quarter will be more robust than the same period in 2013 but contracting volume for the full year of 2014 will not exceed $2.5 billion.

From 30,000 feet, the economic picture in Pittsburgh is still very robust. Hiring in the energy, technology and even healthcare sector is very active. Both the city and the region are getting demographically younger. Supply and demand support for higher rents for both commercial and residential properties remains strong. Absent a final decision on the development of a petrochemical processing complex at the Horsehead site, heavy manufacturers of polyethylene-based products continue to shop for industrial sites and appear to be moving towards agreement on more than one site.

The long-term outlook for construction in Western PA is very bullish. Getting past the fiscal issues of the public sector and the confidence issues of the private sector seem to be what is standing between potential and prosperity as 2014 moves into Fall. BG

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NATIONAL MARKET UPDATE

The Labor Department's report on employment on August 28 marked a high point in a wave of positive economic data that has been reported since mid-year. Following the Commerce Department's July 30 report on gross domestic product (GDP), the surprising news about continued improvements in employment paints a picture of an economy beginning to expand.

Commerce reported that GDP rose 4.2 percent the second quarter. This was dramatically higher than expected and the growth gave credence to the theory that the 1st quarter decline (which was downgraded to -2.1 percent) was due to winter storms and the adjustment to the Affordable Healthcare Act. During the 2nd quarter consumers spent big on durable goods (+14 percent) and spending rose slightly on healthcare. There were also significant gains in construction and business spending.

The August 28 Labor report showed that initial claims for unemployment benefits fell by 1,000 to a seasonally-adjusted 297,000 in the week ended August 23. The lower claims level in mid-August marked the fourth time in six weeks the gauge has dropped below 300,000. The last time that happened was in early 2006.

Perhaps more upbeat than the decline in unemployment claims was the drop in the total number of unemployed people. The August 21 report showed that the number of people drawing unemployment benefits fell by 49,000 to a seasonally adjusted 2.5 million. That marked a new low for the economic recovery that began in 2009. Hiring by U.S. companies has also picked up in recent months. July marked the first time since 1997 that payrolls have grown by 200,000 or more for six consecutive months.

The more rapid pace of job creation and output caused the Federal Reserve's Open Markets Committee to reexamine its time table for both raising short-term interest rates and its bond-buying program. The latter program, known as Quantitative Easing 3 (QE3), has been in the midst of an extended tapering since October 2013, with a planned end to the economic stimulus by December 2014. Ending QE3 had been generally expected to begin upward pressure on borrowing rates but the improving economic conditions are giving the Fed's governors an incentive to raise rates sooner than planned. The Fed's more hawkish members hold that the more robust economy can withstand the needed rise in rates well before the mid-late 2015 target. Several Fed governors also feel that the improvements in the economy are bringing inflation back into the picture – especially wage inflation – and proactive measures are needed to maintain an inflation rate of around two percent.

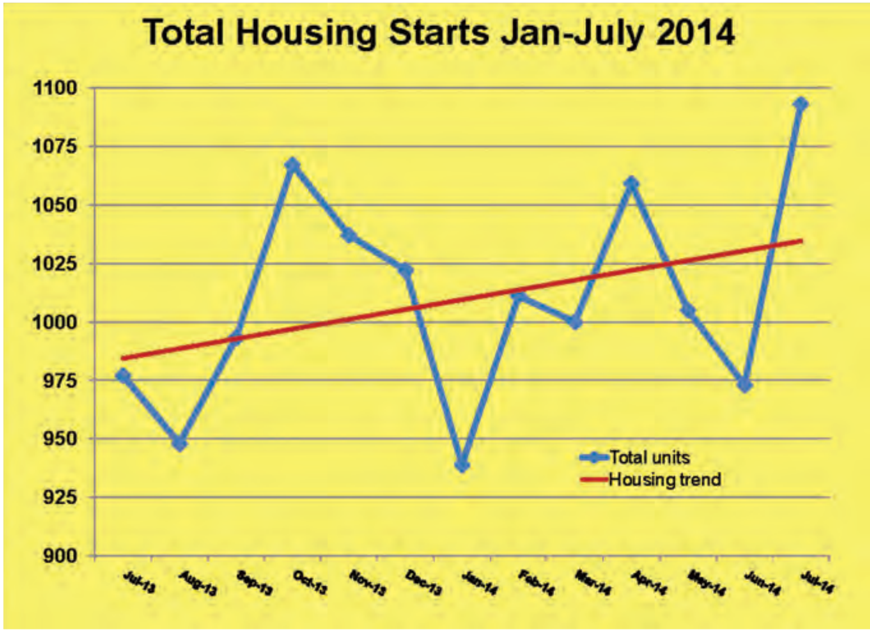
For those watching inflation as a trigger for rates, it's worth noting that the Federal Reserve forecasts baseline inflation to reach nearly 2.5 percent in 2015 before settling back closer to the historical two percent goal. Most members agree that the long-term goal would not be threatened by a year of above-average price increases.

Fed Chair Janet Yellen has tended towards the more dove-ish position of maintaining the low rates for another year as planned. At the Jackson Hole Economic Policy Symposium on August 22, Yellen made comments that raised the possibility that she could be persuaded to raise rates sooner in response to a stronger job market. Yellen even offered a theory that wages have remained lower as employment grew because of deflationary pressures during the downturn. She maintained that firms faced limits in reducing real and nominal wages when the labor market was exceptionally weak, and may find that they do not now need to raise wages to attract qualified workers. If Yellen's conjecture is correct, wages might rise relatively slowly as the labor market strengthens. If this "pent-up" wage deflation is limiting wage growth, wages could begin to rise at a noticeably more rapid pace once pent-up wage deflation has been absorbed.

The idea of pent-up wage deflation has less relevance in construction, where the supply of available skilled workers has become shorter than in other industries. Continued expansion of construction – particularly non-residential construction – will trigger wage hikes sooner than in the overall job market.

Of course, any talk of early increases in interest rates or more aggressive reduction of the Fed's $4.5 trillion balance sheet is predicated on the continued improvement in the U. S. economy. The solid rebound in growth during the second quarter has bolstered forecasts from most economists, with few predicting GDP growth as low as three percent. With consumers and businesses increasing investment, expansion for the coming six-to-nine months seems assured; however, events overseas should be seen as a potential drag on U. S. economic growth.

Geopolitical events in Europe and the Middle East have disrupted even the strongest economies in Europe. After tepid GDP growth in 2013, the economy of the combined European Union nations stagnated in the second quarter. In the EU's three largest economies, output declined. Germany and Italy both saw declines in GDP and France experienced no growth. Conflicts in Gaza and especially in the Ukraine weighed heavily on the more industrial EU nations. Moreover, the declining growth spurred interest rate drops and raised the specter of deflation. These conditions bear particularly hard on borrowers, of which the largest are EU governments. Should the EU slip back into recession – something that is a real possibility with extended conflict in the region – borrowers will face growing strain to meet obligations.



Housing starts in July reached a seven-year high. Source: U. S. Census Bureau.

As was learned during the last recession, a downturn in European economies impacts U. S. gross domestic output by as much as 50 basis points and dampens China's economy even more. That, in turn, limits opportunities for U. S. businesses.

Warning signals from Europe and China aside, the stronger U. S. business climate resulted in stronger demand for construction across most segments of the market through July and August. Data on contracting showed solid, if unspectacular, growth in spending in all segments of the industry except for non-building or heavy/highway construction. Even that segment received a boost when the Senate passed the House of Representatives' proposed $10.8 billion increase in the Highway Trust Fund, providing funding through May 2015.

Census Bureau reported on September 2 that spending on construction was $981 billion, seasonally adjusted through July, an increase of 8.2 percent over the previous year. According to that report, the gap in public versus private spending fell slightly in July, but private residential and non-residential investment still outstripped public spending by more than two-and-half times.

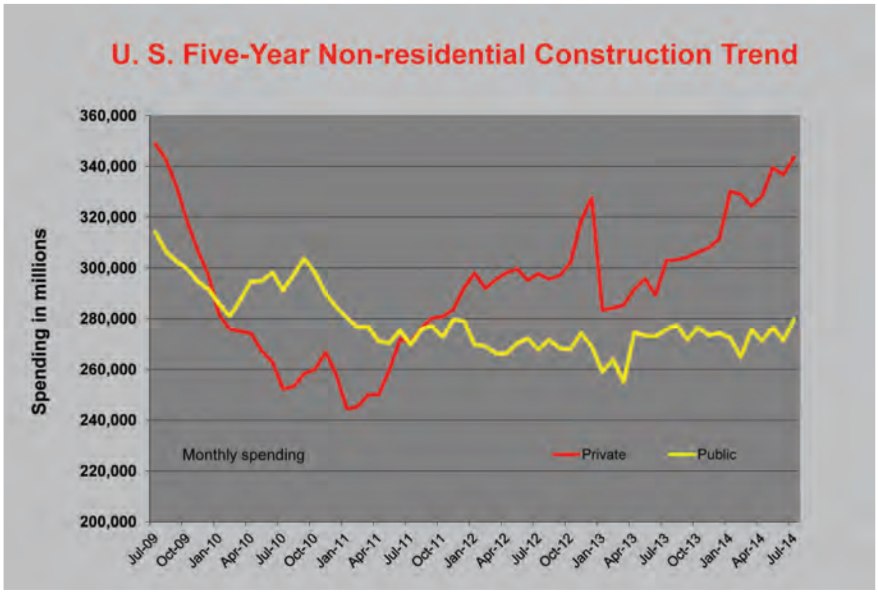
"It is encouraging to see signs of a broad-based recovery in private construction along with a recovery—at least for now—in public construction investment," said Ken Simonson, chief economist for the AGC. "Private nonresidential construction should remain strong through the rest of 2014 and beyond, while residential spending is likely to keep growing, though at a more moderate pace. However, funding is still inadequate for needed public infrastructure improvements."

The Commerce Department's data on housing starts for July was equally upbeat, suggesting that the housing slowdown of the early months of 2014 was the result of abnormally cold weather instead of cooling demand. Starts jumped 16 percent in July from June to an annual rate of 1.093 million units, significantly higher than the 920,000 units that were forecasted for July. That surprising increase lifted housing construction 22 percent year-over-year and 9.1 percent for the first seven months of the year compared to 2013. Commerce reported that applications for building permits rose higher, boding well for the coming months. Even with the constraints on mortgages that are dampening demand from first-time buyers, appetite for new homes is growing. Single-family starts rose 3.2 percent and multi-family starts soared 24 percent compared to the number of units started during the first seven months of 2013.

Reed Construction Data reported that starts for January through July 2014 rose by 4.8 percent compared to the same months in 2013. Reed showed nonresidential building up 0.8 percent year-to-date, although the construction report was the only source showing a drop in commercial starts (-7.1 percent) and gains of 7.2 percent for institutional buildings (7.2 percent) and heavy engineering (12 percent).

Reed's competitor, McGraw Hill Construction, reported that total construction climbed four percent during the first seven months of 2014 and rose six percent in July. McGraw Hill showed nonresidential building up seven percent in July and 13 percent year-to-date, although its research did not show that growth was as broad-based but driven by triple-digit increases in manufacturing and energy-related projects.

For those interested in forward-looking data, the American Institute of Architects (AIA) reported that its Architecture Billings Index (ABI) hit a seven-year high of 55.8 in July, seasonally adjusted, from 53.5 in June. The ABI has historically shown a nine- to 12-month lead time between architecture billings and construction spending. The index is derived from a survey of AIA member-owned firms. Participants are asked whether their billings increased, decreased or stayed the same in the month that just ended as compared to the prior month. Within July's ABI results, it's interesting to note that responses were above 50 for firms with concentrations in all segments of the market; however, 61 percent of firms that self-defined as having a "mixed practice" showed increased billings. These firms had the highest ABI and the responses suggest that future construction expansion will be broad-based. BG



The gap between private and public spending on non-residential structures remains abnormally wide.

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WHAT'S IT COST?

The specter of construction price inflation continued to creep into the marketplace in July. An analysis of the major building type costs reported by the Bureau of Labor Statistics (BLS) on August 13 reveals that prices have climbed 50 percent faster for construction than for consumer inflation or other producer prices. Moreover, the lion's share of the year-over-year increases has occurred within the past few months, with July inflation running at a pace that would lead to inflation in construction prices above five percent.

According to the BLS, producer price index (PPI) for final demand construction rose 0.5 percent and 3.3 percent in July. Final demand includes goods, services and five types of nonresidential buildings that BLS says make up 34 percent of total construction. The overall PPI for new nonresidential building construction—a measure of the price contractors say they would charge to build five categories of buildings—rose 0.4 percent for the month and 3.2 percent since July 2013. Compared to July 2013, the costs for new warehouse construction rose 2.3 percent; costs for office buildings rose 3.1 percent; industrial buildings jumped 3.6 percent; health care buildings cost 3.6 percent more and schools increased 3.7 percent. Producer prices for inputs to construction were up 2.0 percent over the previous 12 months. Construction products or materials with significant price swings during the past year included lumber and plywood at 12 percent; gypsum products at 8.6 percent; insulation materials, up 7.6 percent; hot-rolled structural shapes, up 7.2 percent; and asphalt felts and coatings, which declined 7.2 percent.

Another data source for construction costs, Engineering News Record (ENR), tracks historical prices in its Construction Cost Index and Building Cost Index. During August, ENR reported that material costs were up only slightly year-over-year, rising one percent overall although prices varied widely from item to item. ENR found that finished costs were up significantly more, with labor costs outstripping the components. The Building Cost Index rose 2.1 percent during the past 12 months; Construction Cost Index jumped 3.2 percent, with skilled labor up 3.7 percent.

While inflation for building products and materials varies widely from one item to another – driven by individual shortages or demand spikes – the rate of PPI growth in the completed construction categories is very consistent. This suggests that inflation is being driven by labor costs more than components.

Construction workers are among the categories of skilled labor that are becoming more limited as the national non-residential construction recovery heats up. In many regional markets – and Pittsburgh is one of them – workforce utilization is nearing 100 percent in construction trades, even though contracting is well below full capacity levels for construction companies. Further growth in construction, which is expected to accelerate during the balance of 2014 and 2015, will put more upward pressure on wages. BG

PERCENTAGE CHANGES IN COSTS	July 2014 compared to		
	1 mo.	3 mo.	1 yr.
Consumer, Producer & Construction Prices			
Consumer price index (CPI-U)	0.2	0.9	2.1
Producer price index (PPI) for final demand	0.1	0.1	1.7
Construction final demand	0.5	0.6	3.3
Costs by Construction Types/Subcontractors			
PPI for all inputs to construction	0.0	0.2	2.0
Residential buildings	0.0	0.2	2.5
New industrial building construction	0.1	0.0	1.4
New warehouse construction	0.9	0.8	2.3
New school construction	0.2	0.5	3.7
New office construction	0.5	0.6	3.1
New healthcare construction	0.1	0.6	3.6
Concrete contractors, nonresidential	0.3	0.3	1.5
Roofing contractors, nonresidential	0.4	1.6	4.2
Electrical contractors, nonresidential	0.6	0.6	0.8
Plumbing contractors, nonresidential	0.4	0.6	5.2
Costs for Specific Construction Inputs			
#2 diesel fuel	-0.3	-3.4	-1.2
Asphalt paving mixtures and blocks	0.0	1.6	2.2
Cement	0.2	0.7	5.9
Concrete products	0.5	0.6	3.6
Brick and structural clay tile	-0.1	0.2	2.2
Plastic construction products	0.0	-0.8	1.5
Gypsum products	-0.3	1.9	8.6
Lumber and plywood	0.2	1.0	11.6
Architectural coatings	0.1	0.4	0.6
Steel mill products	0.1	0.5	3.9
Copper and brass mill shapes	3.3	5.1	2.9
Aluminum mill shapes	1.4	2.1	5.0
Fabricated structural metal	-0.5	-0.9	-0.4
Prefabricated metal buildings	0.7	1.8	6.1
Asphalt (at refinery)	1.7	9.3	8.5
Iron and steel scrap	0.2	-5.9	2.9

Source Bureau of Labor Statistics, Updated August 15, 2014
Compiled by Ken Simonson, AGC Chief Economist

ENERGY UPDATE: Made In

Even as the natural gas industry was first ramping up, its exploration efforts its leading players were spreading a message of future prosperity that had less to do with royalties and mineral rights and more to do with a revitalization of the manufacturing base that Western Pennsylvania residents had given up hope of seeing again. The year 2014 is likely to be one that is looked back upon as the start of this new industrial era – assuming of course that Royal Dutch Shell or someone green lights the long-awaited ethane cracker. Whether or not the thumbs up comes this year – or at all for that matter – manufacturing is making a comeback in the U. S. because natural gas has made energy for manufacturing cheaper than whatever advantages cheap labor provided overseas. In that regard, this manufacturing renaissance is a back-to-the-future phenomenon.

America Again

During the economic resurgence that Pittsburgh has experienced over the past five years or so, the sources of the new economy have been frequently identified as energy, healthcare and education. The latter two have been at the center of the regional revitalization strategy for the past 30 years and the successes in those sectors – which have often gone hand-in-glove with high technology – have been incremental. It is in the energy sector that the success story has virtually been overnight.

Our regional civic and business leaders deserve credit for having vision and patience and perseverance during this incredible long turnaround from Steel City to economy of the future; however, none of them can take credit for seeing the Marcellus Shale play coming. And while other segments of the energy sector have seen successes too, none has had the economic impact that natural gas has had. And if Range Resources' ads are to be believed, "drilling is only the beginning."

ENERGY'S IMPACT

The impact of the shale gas play – which is not confined to the more recent Marcellus and Utica exploration – has not been limited only to those industries tied directly to natural gas. The enormous growth of natural gas supply has made the resource a viable alternative to other fuels. The most obvious, or at least most discussed, are the replacement of coal in power generation and diesel or gasoline in combustion engines. But the expansion of the use of gas has had collateral impact too.

Annual average employment 2007		Average annual employment 2012		Increase in annual average employment 2007–2012		
State	Level	State	Level	State	Level change	Percent change
Texas	194,818	Texas	259,333	Texas	64,515	33.1
Louisiana	46,624	Oklahoma	56,040	Pennsylvania	15,114	259.3
Oklahoma	44,005	Louisiana	50,695	North Dakota	12,477	354.3
Colorado	18,908	Colorado	24,043	Oklahoma	12,035	27.3
California	18,431	California	22,661	Colorado	5,135	27.2
Wyoming	17,743	Pennsylvania	20,943	California	4,230	23
New Mexico	15,093	New Mexico	18,560	Louisiana	4,071	8.7
Alaska	11,651	Wyoming	17,121	New Mexico	3,467	23
Kansas	8,065	North Dakota	15,999	Alaska	1,990	17.1
Pennsylvania	5,829	Alaska	13,641	Arkansas	1,897	40.5

Pennsylvania lagged only North Dakota among states with the highest growth in oil/gas industry wages since 2007. Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages program.

Since the Fukushima Dai-Ichi reactor accident during the 2011 earthquake in Japan, demand for nuclear power plants has chilled. Similar to the market reaction following the 1979 Three Mile Island accident, safety concerns have taken nuclear out of favor in many developed nations, including the U. S. This has flattened the amazing growth path that reactor manufacturer Westinghouse had been following; however, it is often overlooked that natural gas has been a significant factor in the declining demand too. The abundance and price of gas makes gas-fired power plants much cheaper to build and operate; and of course, the duration of the regulatory and construction periods for nuclear plants is dramatically longer.

These unfavorable market conditions have led to the reduction in jobs at Westinghouse that has been in the headlines for the past year or so. Judging from Westinghouse's employment figures, how-

Percent Change in Employment and Wages, 2007–2012		
Area	Percent change	
	Employment	Average annual pay
United States, all industries	–2.7	10.9
Pennsylvania, all industries	–1.3	11.9
United States, oil and natural gas	31.6	14.6
Pennsylvania, oil and natural gas	259.3	36.3
Allegheny County, oil and natural gas	287	63.7
Indiana County, oil and natural gas	78.3	5.6

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages program.

Pennsylvania's growth in oil/gas wages and employment was nearly ten times that of the total U. S. Allegheny County surprisingly saw the biggest impact.

ever, it seems like the reduction has been less severe and more a reflection of the company's relatively rapid earlier expansion. According to Westinghouse, roughly five percent of its workforce has been reduced, with employment in the Cranberry Township headquarters falling to about 4,000 people. In the latter part of the previous decade Westinghouse had added 6,000 jobs globally, including more than 1,500 locally. Even with the cuts in 2013 and 2014, employment in the Cranberry headquarters is still more than 1,000 people higher than when the company was located in Monroeville just a few years ago.

Pittsburgh has deserved its reputation as a city with many early adopters of green building. A broad range of jobs related to sustainability have been created over the past two decades in consulting, design, advocacy and construction. But as an economic engine, alternative energy businesses have not been a huge economic engine.

While a number of businesses have cropped up and prospered in the alternative or renewable energy category, there have been fits and starts with the emerging technologies. Market conditions have pared job creation in renewable energy businesses. For the long haul, businesses in this segment of the energy industry are going to continue to be well-served by the proximity to major research universities with leading-edge colleges dedicated to sustainability. The Pittsburgh economy is better served by having this advantage but the economic gains accrued from it will be smaller and more gradual than those in shale gas, for example.

For better or worse, the vast majority of the economic impact of the energy sector in Western PA has been a result of the dramatic uptick in natural gas exploration in the shale formations. At a time when the price of crude oil is stuck at levels that are double the price of a decade ago and four times the price in 1995, natural gas prices are at the same levels as 30 years ago. The ramped-up shale exploration is the main reason for the abundant supply and the impact of exploration in those areas being drilled – Texas, North Dakota, Ohio, West Virginia and Pennsylvania – is exceptional.

A look at the employment and wage growth between 2007 and 2012 tells the story well. Employment and wages were only beginning to recover from the recession at the end of 2012 and according to the Bureau of Labor Statistics, employment in the U. S. was still lower at that point than at the same point in 2007. The same was true for Pennsylvania, if you compared employment across all industries. In the oil and natural gas industry, employment was up over 30 percent in the U.S. In Pennsylvania, employment in natural gas and oil was up over 250 percent. More striking, employment in gas and oil in Allegheny County – where less than 50 wells had been drilled – was up 275 percent.

The average annual wages for those employed in the oil and gas industry were also much higher in Allegheny County, rising roughly 60 percent compared to approximately 35 percent for all oil and gas workers in PA.

Washington County has probably seen the most significant economic impact. "We have seen a six percent increase in population in the county," notes Larry Maggi, chairman of the Board of Commissioners for Washington County. "The spinoffs from the

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The renaissance in American manufacturing is being driven by natural gas on two fronts …

energy drilling here have been phenomenal. It has brought big companies – international companies – to this area to be close to the source of inexpensive energy. We learned from how the [decline of the] coal industry devastated the county and tried hard to make sure we didn't have the same problems with oil and gas."

The impact on construction from the shale gas play in Western PA has been equally transformational. All along I-79 and I-70, industrial parks have filled up with businesses locating in the region to serve the gas industry. Southpointe, already a successful office park, has exploded as a result of its strategic location in Washington County along I-79. The industry has been just as important to the rapid absorption of space and new construction along the Parkway West, where vacancy has fallen from 20 percent to less than five percent in four years.

Gas exploration has also had an impact on the construction labor force. According to estimates by construction consultant FMI, 3.8 percent of the total construction workforce was engaged in oil and gas construction. By 2012, that share had climbed to 6.4 percent and FMI predicts that by 2017 nearly 10 percent of the total U.S. construction workforce will be employed in oil and gas work.

This trend is one that is a problem for the construction industry. Skilled workers retire younger than the general population. With the Baby Boomers now reaching retirement age, construction workers are retiring in even larger numbers than the general population. Because oil and gas companies use many of the same skilled workers as construction – and have historically paid higher wages – the growth of natural gas exploration has eroded the construction workforce further.

Construction in this sector of the industry isn't confined to drilling wells, of course. The gas industry has invested billions of dollars in what it calls the midstream facilities, which are the processing plants that separate the components of natural gas and the pipelines that move the gas and byproducts.

Activity in midstream construction has slowed as drilling slowed in 2013 and this year but construction of new separation and compression facilities continues. Natural gas production in PA was 1.9 trillion cubic feet in the first six months of 2014. That gas still has to be processed and the duration of the play ensures that construction of midstream facilities will also grow, asserts Mike Hopkins, vice president of midstream for Vantage Energy.

"As far as the life of the field, it's easily 50 to 75 years. We're just five years in so there's a lot more building to go," says Hopkins. He predicts that the work will be somewhat different than the early projects. "There won't be as many green field projects but more expansion of existing compressor stations."

Yet for all of the impact that exploration and midstream activities have had on Southwestern PA, most observers predict that it will be the downstream impact that will truly transform the economy of the region, and the national economy along with it. If these industry experts are correct, the most lasting impact of the shale gas play will be the revitalization of American manufacturing.

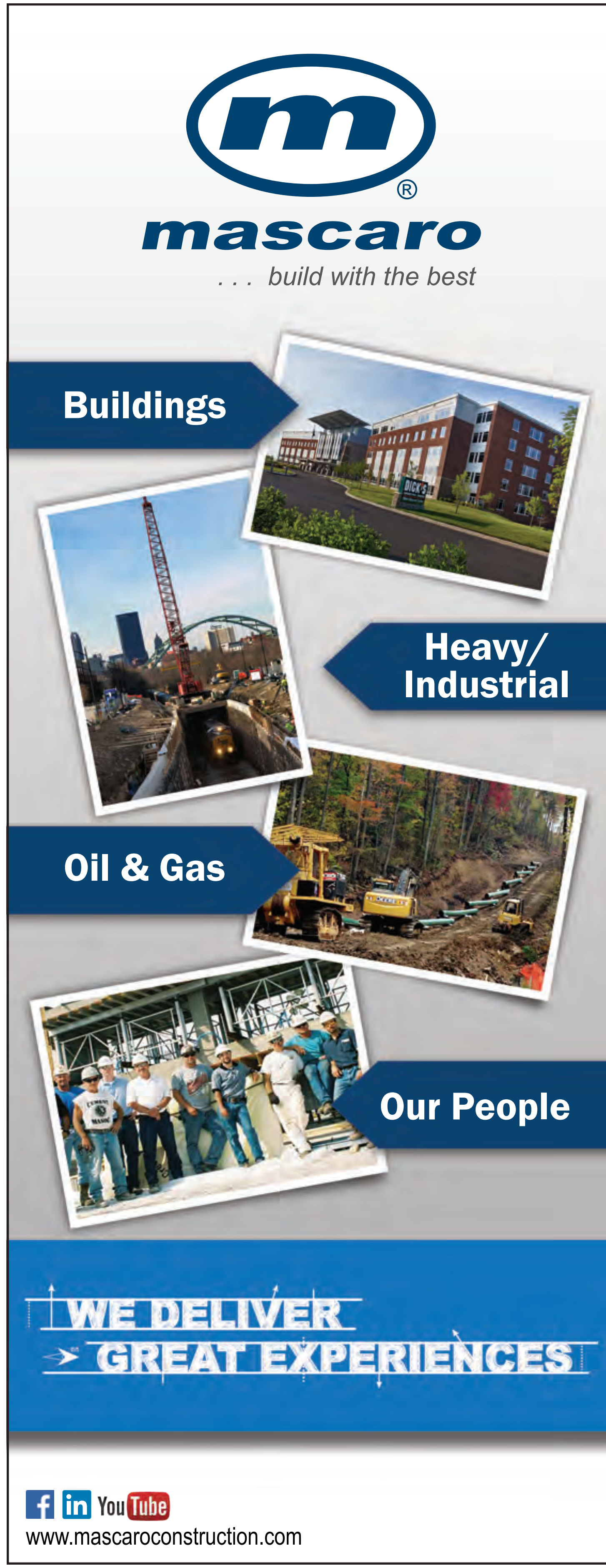
DRIVING MANUFACTURING HOME WITH GAS

The renaissance in American manufacturing is being driven by natural gas on two fronts: as an energy source; and as a feedstock. It is the latter that we have been hearing most about in Western PA with regard to the ethane cracker Shell has proposed. But the relatively low cost of energy is what is attracting manufacturing of a variety of products back to U.S. locations.

As the graphic in Figure 1 shows, the production of ethylene is the critical step in processing natural gas into the products that other manufacturers will make downstream in the value chain.

IHS is a global information and research company that produced a report in late 2013 that analyzed the impact of shale gas – what it refers to as "unconventional energy" – on U.S. industries. Its data showed that by 2025, unconventional energy will lead to as much as $100 billion in investment in U.S. chemical and plastics facilities and boost industry capacity by nearly 89 million tons. The American Chemistry Council (ACC) tracks the announcements of such investment projects in the U.S. As of August 31, the ACC's data showed 197 separate projects, totaling $125 billion in the pipeline.

Behind this enormous increase in chemical manufacturing projects is the reduction in costs that is a result of the abundant natural gas liquids (NGL). NGLs are the principal feedstock for basic chemical and plastics in the U.S. Since feedstock comprises about 75 percent of production costs,

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lower prices favor U.S. chemical makers in global markets. The shale gas plays around the U.S. have shifted the dynamics of America's competitive position relative to the rest of the world. In 2005, the U.S. chemical industry was the highest-cost producer in the world. As of 2013, only the Middle Eastern chemical industry had lower-cost producers. This competitive advantage will be even more pronounced as the shale play matures. IHS forecasts that the supply of natural gas liquids will double by 2020 and the ethane supply will quadruple by 2025.

The ACC's Jennifer Scott says that it is the long-term supply prospects that are driving the new plant capacity and the reinvestment in plant processes that will take advantage of the natural gas prices.

"Our industry really has a lot of confidence, not just in natural gas but also in natural gas liquids," Scott says. "It gives our CEO's the confidence that their feedstock supply will be there for an extended period of time."

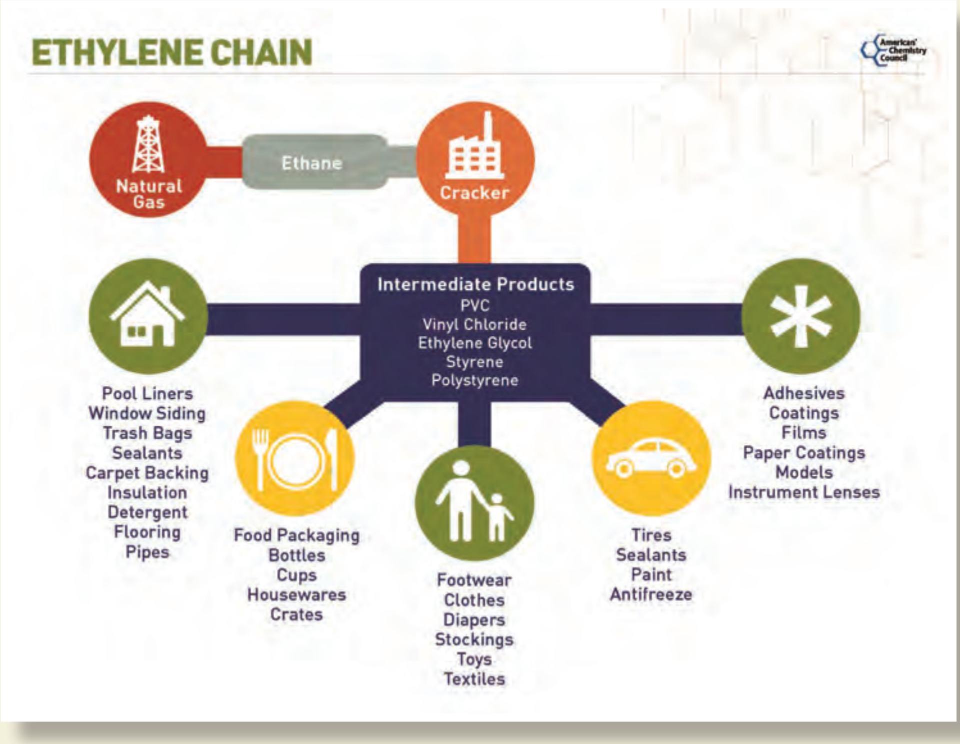


Figure 1.The process of cracking ethane into ethylene is critical to the manufacturing chain of dozens of products for which it is a feedstock. Source American Chemistry Council.

One example of the kinds of retooling of which Scott speaks is going on outside of the chemical industry. The steel industry has taken advantage of the low gas prices to refine the steel-making process by combining natural gas and iron ore pellets to make direct reduced iron (DRI), which allows steel manufacturers to make higher-quality steel and replace 20 to 30 percent of the scrap iron used to manufacture finished steel. Natural gas' lower costs have made the use of DRI more practical in steel manufacturing. NUCOR recently opened a $750 million DRI plant in St. James Parish, LA. North Star BlueScope Steel completed feasibility studies for a DRI manufacturing facility at its Delta, OH plant, although the company put plans on hold in July.

The difference in energy costs between the U.S. and the rest of the world is significant. Compared to European countries and Russia, U.S. methane is less than half the cost. Gas prices in Japan, Indonesia and China are more than four times what prices are in the U.S. Price Waterhouse estimates that the reduction in costs for U.S. manufacturing will be $11.5 billion because of shale gas. For an energy intensive endeavor like manufacturing, those kinds of dynamics can offset cheaper labor costs that made manufacturing overseas attractive.

"Our industry really has a lot of confidence, not just in natural gas but also in natural gas liquids," Scott says. "It gives our CEO's the confidence that their feedstock supply will be there for an extended period of time."

"That's what we hear our members talking about. Manufacturers moving here because the energy inputs are so much cheaper," says Ross Eisenberg, vice president of energy and resource policy for the National Association of Manufacturers. "The sectors benefitting at the front end are in the natural gas value chain or in chemicals and plastics, but it's going to affect a broad range of manufacturing: aluminum siding, pipes, plywood, electronics, even toothpaste."

Thus far at least, other countries have either been slow to explore their own gas reserves or have obstacles that are impairing the industry. Like with the geology for oil, large reserves have been found and drilled in the Middle East and Russia, however, political and social events in these parts of the world make them no more reliable for gas than for oil. China, which is rapidly becoming the world's second largest energy consumer, embarked on an ambitious campaign to boost production to roughly one trillion cubic feet annually. Even with U.S. help however, drillers have found that China's reserves lie in much harder rock and in areas without adequate water supply. China recently made a deal with Russia to increase its gas imports by 38 billion cubic feet per year.

As might be expected, Eisenberg and his organization are advocates for a Federal energy policy that will ensure that this competitive manufacturing advantage remains intact and creates a sense of certainty among U. S. companies.

"Obviously, we don't have any real clear energy policy. Right now our energy policy is being set by the EPA and that's not a

MANUFACTURING'S ENVIRONMENTAL IMPACT

The development of the Marcellus Shale formation has been a concern for environmentalists since the drilling began. As the shale gas play moves toward becoming a larger industrial play, advocates for clean air and water are eager to see that whatever the new industrial Pittsburgh looks like bears no resemblance to the old industrial Pittsburgh.

Balancing industry and environment is difficult. The idea that companies would build new plants along the rivers where the steel industry once thrived is appealing from an economic point of view, returning jobs to communities that have struggled to find a new identity for 30 years or more. At the same time, the demise of the industrial base played a significant role in the cleanup of the region's rivers and wildlife. Even with all the strides made in greening Pittsburgh, 2013 marked the first time that Allegheny County's air quality met the Environmental Protection Agency's emission standards since the monitoring program commenced in 1999.

The executive director of Sustainable Pittsburgh, Court Gould, says that he is confident that whoever builds new plants in the region will be cognizant of the environmental regulations but raises concern about the problems that will arise.

"New facilities are subject to EPA regulations that require Best Available Control Technologies (BACT). Shell is a huge corporation so they will comply with BACT," he says. "But those facilities emit VOC's and nitrous oxide. It will be more difficult to meet Federal compliance for air quality. Most of those facilities are built in flat, windy, arid conditions. The site in Monaca is a classic river valley site. The air stays in the valley. They will need to do modeling to ensure the air quality."

"If you're talking about building new facilities, these companies know the best practices and solid industry certifications that go into design, building or even just being a good neighbor," says Mike Schiller, CEO of the Green Building Alliance. "I hope that every new building, every parcel that gets developed, the owner does the very best it can to build state-of-the-art buildings – state-of-the-art for building, health and community."

Schiller points out that a number of manufacturers in Western PA have taken great pains to make new facilities sustainable. He called out Ductmate Industries, Berner International and

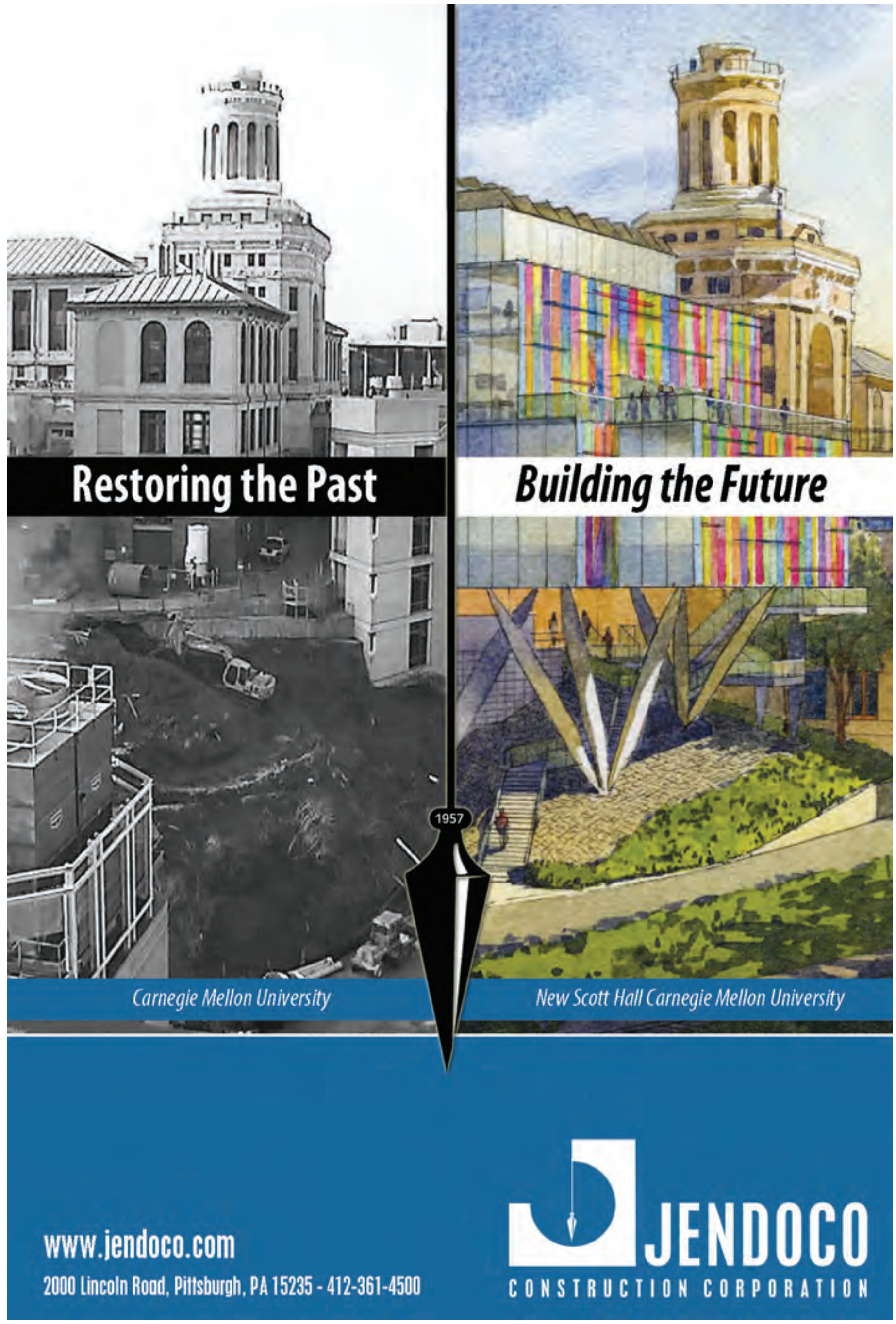
Pitt-Ohio Express as three that have built green buildings, including the ongoing operations and pollution control after occupancy. He also expressed the hope that the companies setting up shop in the region would work to provide employment for local residents.

"Even if there are only 400 to 600 permanent jobs, there may be a way to train folks here to do the work rather than importing them," Schiller says. "Short of building company towns again, there is an opportunity to reinvest in older, rundown parts of town to be places to work, live and play. We could talk about an Eco-District."

EcoDistricts are initiatives involving private and public partners to revitalize a city at the neighborhood level. The Clinton Global Initiative has thrown its support behind the EcoDistrict movement to help create American communities that collaborate to be sustainable at all levels.

Court Gould expanded on Schiller's suggestion of an EcoDistrict surrounding new industrial development. Such districts exist in other parts of the world where commodity synergies exist between raw materials and byproducts. Of course, doing that requires transparency from the manufacturers about specific inputs and outputs of the manufacturing processes. Gould sees the region's inventory of polluted former industrial sites as opportunities that could fit the petrochemical industry.

"These major corporations are not going to be deterred by even our dirtiest sites. They would be happy to have the river and rail access that comes with them," Gould notes. "There are eco industrial parks where symbiosis between industries makes efficient use of resources and waste. Material is expensive to take off site to dispose. One company's waste becomes another's raw material."



terribly good way of doing it," Eisenberg points out. "But all the fighting back and forth [in Congress] has created a paralysis that has allowed the market to work. If there had been a policy debate in 2007, shale gas wouldn't have even been part of the discussion."

Anecdotes about large construction projects like Sasol's $20 billion gas-to-liquids plant or Methenex's relocation of a fully-operational methanol plant from Chile to Louisiana underscore the advantages that shale gas is affording. But for Western PA businesses, the focus of the shale gas revolution in manufacturing is in Monaca.

Shell continues to evaluate its proposed petrochemical facility in Beaver County even as Labor Day came and went. Before Shell will be in a position to make a final investment decision, the company must still confirm the suitability of the site, secure final permits and validate customer support for the products. All of this has been ongoing since March of 2012, when Shell announced its preference for the Horsehead site. Shell spokesman Mike Marr explained that such work was part of "continuing the evaluation of project economics. This proposed project must compete against other future investment opportunities Shell has within its global portfolio of options."

Like other energy giants, Shell has found the global market more challenging in the last year or so. The company cancelled a gas-to-liquids project in Louisiana earlier this year when the price tag rose to $20 billion and Shell maintains that all capital expenditures are being scrutinized closely. At the same time, few investments in the petrochemical industry offer as good a combination of nearby supply and demand as the Monaca cracker. Mike Marr explains that the location would convert ethane to ethylene and then to polyethylene, a plastic that is needed by a broad spectrum of users.

"If built, Shell's petrochemical complex would produce the building blocks used to make a wide range of everyday products such as food packaging and containers, diapers, film, crates, trash bags, toys, bottles and housewares, among many others," Marr says. "With approximately 50 percent of North America's demand for polyethylene within a 700-mile radius, the proposed plastics manufacturing facility would provide manufacturers with shorter supply chains, great flexibility and dependable supply of raw materials."

That proximity to consumers and Shell's customers is what should ultimately give the project a green light, although

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Marr emphasizes that no outcome is certain. Proximity is what will also draw more of the customers for ethylene and polyethylene to Southwestern PA. It's why the Shell project is the critical first domino to fall. Reports that the existing infrastructure is adequate to commercialize the gas coming from the Marcellus and Utica formations ignore the economic basics.

"By linking locally-produced ethane with regional manufacturers who depend on polyethylene as a raw material, the proposed project would eliminate the economic and environmental costs of shipping ethane to U.S. Gulf Coast petrochemical plants and then transporting polyethylene back to the manufacturing base," explains Marr.

Construction of the Shell plant will be a boon to regional employment; in fact, the demand for workers will make it a multi-regional boon. Once the plant is running, the company projects employment to be 400 workers, somewhat less than the number Horsehead employed. It is the attraction of many manufacturers that will have the multiplying effect that regional and industry leaders expect. In its permit filings, Shell estimated that the indirect and induced job growth arising from its operation would range from 2,000 to 8,000 permanent jobs.

That's a lot of jobs, even if it is a conservative estimate. However, a number of regional economists expect to see as many 20,000 new jobs added in metro Pittsburgh during each of the next three to five years. The Shell project, assuming it proceeds, will be but one piece in a larger puzzle of rebirth, a revitalization of "Made in America" that would be a needed shot in the arm for the middle class, especially those in struggling towns.

"There has been lots of interest in properties from Brownsville up to Monongahela," Larry Maggi says. "We are actively competing with a couple of states for projects."

The Marcellus and Utica shale exploration has put Pittsburgh back in the center of the manufacturing economy. Regardless of when or how the natural gas and chemical business build out in southwestern PA, plentiful and inexpensive energy is a stronger competitive advantage than U. S. businesses have had in decades. Factor in the increasing value of available water and it's easier to see how Pittsburgh should get its share of the industries that set up shop in the U.S. Some amount of the goods "Made in America" will also be "Made in Pittsburgh." BG

Operating Engineers Local 66 Joint Training Center

As with other skilled construction trades, the operating engineer no longer spends time as an apprentice and then adds to his or her skills through experience in the field. The journeyman operator has the need for additional training because of new technology and heightened emphasis on safety and specific training by construction owners. When James Kunz became business manager for the Operating Engineers (IUOE) Local 66 in 2004, that need was foremost in his mind.

Kunz inherited facilities that were in need of updating and a trade that was about to see a reversal in demand that would magnify some of the shortcomings he perceived in how the training facilities served the Local. "I had it in my mind when I first became business manager but (the training center) was kind of put aside while we looked for a new business office," he relates. "We were having larger apprenticeship classes and doing significantly more journeyman training. It's all about continuing education in our business."

After purchasing and renovating an office in the RIDC Industrial Park in August 2006, Kunz set his sights on upgrading the training facilities, which consisted of several older structures on 138 acres in Salem Township near Route 22 in Westmoreland County. Jim Kunz was a leader who had come up through the field in his trade. Kunz's father had been an operating engineer. When he followed him into the business Kunz had been trained at the Westmoreland County site. More than 30 years later, he felt those facilities had seen enough operating engineers.

"We had the same building for apprentices [in 2008] as when I joined in 1976," he explains. "We added a new mechanics program in 2003 but had no facilities for it and we had some modular classrooms there that were in pretty bad shape. I wanted to move the training facilities into the 21st Century."

Kunz asked the architect and general contractor for the business office project – Mascaro Construction and PWWG Architects – to participate in the early stages of the training center project. PWWG was hired in 2008 and began working with the Operators to design a facilities plan for the site, which was completed in May 2009. As the process of transforming a program into a design proceeded in 2009, Mascaro was asked in February 2009 to begin

One of the key design challenges was lighting and conditioning the environment for the center's high bay wing where mechanics' training is conducted. Photo by Massery Photography.

helping with the budget and feasibility of what was being planned. Almost from the start, the wishes of the Operating Engineers exceeded the amount that was budgeted.

"The [IUOE] covers such a large geographical area that there was the need for a pretty substantial facility. This was going to be the training center for the western half of Pennsylvania and the panhandle of West Virginia," observes Sheldon Goettel, partner at PWWG Architects. "There was a constant tug of war between budget and program. They also wanted to show some leadership in sustainability and had a desire to use the construction as a demonstration to supplement what the apprentices learned in the classrooms."

The architects relished the challenges of designing a green building that was industrial and educational in use. "We worked with the Center for Building Performance and Diagnostics from CMU and put together a good team of consultants to set some pretty lofty goals for sustainability," says Tony Pitassi, project architect for PWWG. "The Operating Engineers planned to go to Harrisburg and use the sustainability to help with funding."

"We designed the first building and it was a real educational experience. We wanted a really green building, something we could use as a demonstration model for our people but it was going to be $12 or $13 million," Kunz recalls. "We needed to take a deep breath. This was just before the Marcellus Shale took off and highway money had dried up. There was just less funding available.

We looked at wind, solar and biodiesel but none of them made financial sense, so we took out the meat cleaver and cut the project back."

John West, senior project executive for Mascaro Construction, recalls that the cost issues went beyond the "wish list" of energy solutions. According to West, the challenges of the site added an unusual burden to the budget, making up as much as 25 percent of the total cost. Coal had been mined on the site through both strip mining and deep mines. The existing structures used wells for water and had a 120 volt electrical service, neither of which would suffice for the new training center. A lot needed to be done to prepare the location before the first foundation was poured.

"We had to bring water almost a mile from a main from Route 22. Upgrading the electrical service meant bringing that onto the site new," West says. "We tried three or four different soil treatments to deal with the mines. We budgeted it different ways for two years but there were so many things driving up the costs that we just walked away for two years."

That period of time was a very dynamic couple of years for construction. Work slowed drastically across the whole economy. Contractors came into the year 2009 with hefty backlogs for the most part but by late 2011 had worked through them and a more competitive environment existed. At the same time, the market conditions blossomed for the Operating Engineers. Pennsylvania was well-prepared to put the $1.9 billion in stimulus money to work in 2009-2010, creating significantly more work hours for Local 66 members. More importantly, as that work was slowing, the exploration of the Marcellus Shale formation ramped up. A number of Local 66's bigger employers – including Mascaro Construction – secured work preparing well sites and building access roads. The Operating Engineers found it needed to recruit craftspeople from other regions to meet the demand.

West observed the changing conditions and decided to call Jim Kunz.

"I called Jim and said that the market had changed. I thought we could make things work," he says. "We brought in Dr. [Javaid] Alvi [of Geo-Mechanics] and he came up with different approaches to the site problems. We were able to find the money."

During the intervening couple of years, Jim Kunz was also working behind the scenes to find other sources of funding the project. While mines and utilities were tough challenges for his contractor and architect, Kunz has no doubt about what kept him up at night.

"The biggest challenge was the funding. We have a well-run program that operates on a contribution rate that is not that high," he notes. "Our challenge was how to pay for a new facility that we could afford without negatively impacting the training program.

"Mark Critz (then Representative for the district) got us a $1.8 million EDA [Economic Development Administration] grant, which helped with the foundation issues. From the Senate Republicans we got a $500,000 RACP [Redevelopment Assistance Capital Program] grant and after Gov. Corbett was elected, the Senate Democrats helped with a $500,000 RACP grant."

In addition to the development grants, the Operating Engineers chose to use the training program itself to help close the funding gap. Apprentices performed most of the work needed to prepare the site, using the Operating Engineers' equipment to do the excavation and run the utilities to the site. The work was videotaped and is used as part of the training for current and future apprentices.

These changes in market were part of the solution but so were changes in the design. Part of that solution was a reduction in the size of the building and an increased efficiency of the functional design. According to Goettel, PWWG looked at every aspect of the building and thought through its operation with Local 66. The classrooms had to be flexible spaces that could also be social spaces for the alumni of the program. Storage had to be integrated into the functional space. The flow of the building had to work so that apprentices coming in from the practice fields could enter, clean up and then proceed to the clean classroom wing without wasting time, or failing to clean thoroughly before coming into finished spaces.

By September 2012, Mascaro was able to fully close the gap, bringing the 32,000 square foot facility in line with the $8 million budget.

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The new training center building sits in the midst of practice fields where training on all sizes of heavy and light equipment is done. Photo by Massery Photography.

"There is not one ounce of flash in this project," declares Goettel. "It's an intelligent design. Every piece was completely thought out.

"There is not one ounce of flash in this project," declares Goettel. "It's an intelligent design. Every piece was completely thought out. It's meant to be impressive in the work that is done there. The building recycles a very challenging site. It sits on the boundary between former deep and strip mines and required a technically challenging approach to geotechnical remediation."

Dr. Alvi's solution for the mines was to use deep dynamic compaction to fill in as much of the voids as possible organically, cutting down on the amount of concrete mine grouting that was needed. PWWG came up with other organic solutions to one of the new center's more difficult engineering challenges.

One of the hands-on portions of the training center is the 16,000 square foot high-bay area, which houses some of the equipment training – like the overhead cranes – and the training area for the equipment mechanics. In their old facility, apprentices developed the habit of keeping overhead doors open all the time to create ventilation and cool the bays during the warmer weather. This practice also added natural light. But the unwanted byproduct of the natural ventilation was dust and dirt that was stirred up in the heavy equipment practice fields outside. Apprentices and instructors would still want to have doors open periodically throughout the day in the new facility but were looking for ways to limit the problems associated with that.

"In that high bay section there was a real need to control the environment," Goettel says. "It was an area that could get incredibly dirty but needed to be incredibly clean in places."

PWWG selected raised skylights that are designed to take in significantly more light than a flat skylight profile, diffusing the light over a broader area inside. This improved the quality of the lighting while cutting back on the energy needed for light fixtures. The HVAC solution

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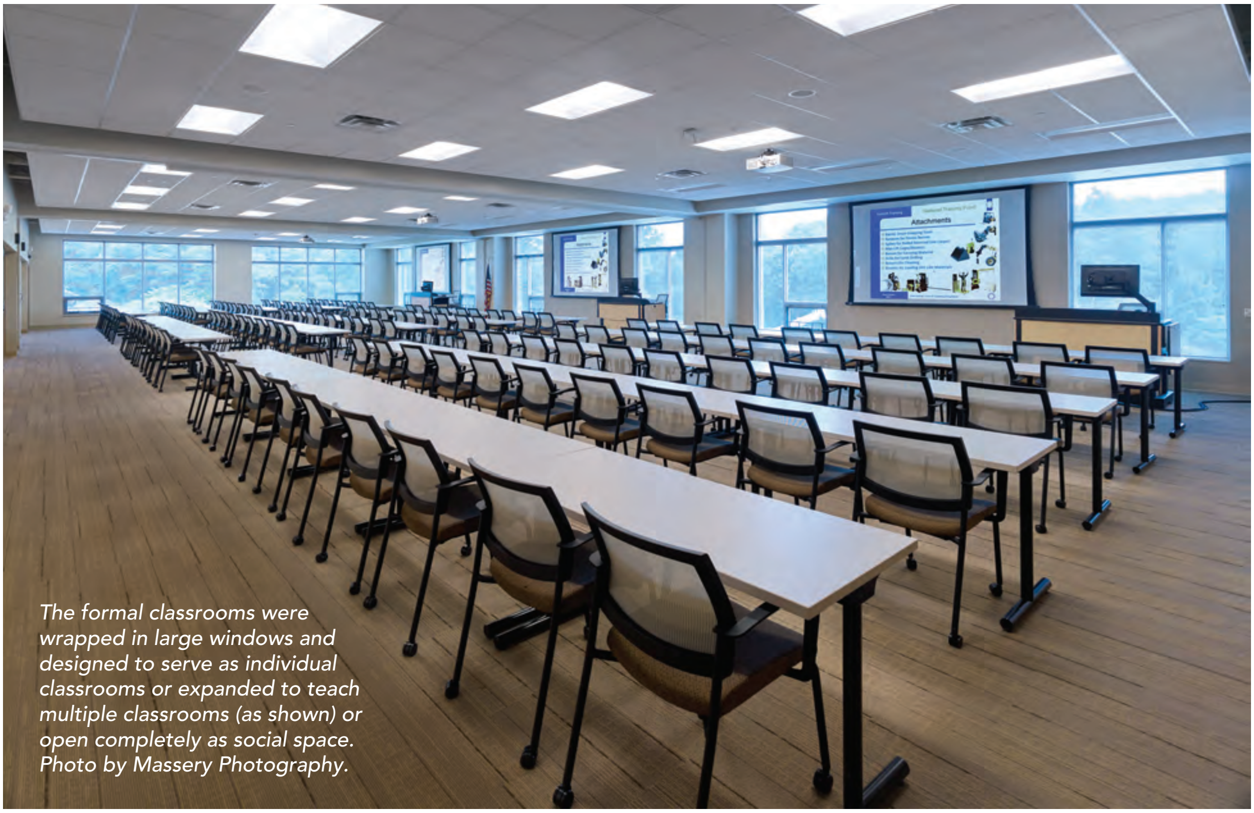

The formal classrooms were wrapped in large windows and designed to serve as individual classrooms or expanded to teach multiple classrooms (as shown) or open completely as social space. Photo by Massery Photography.

is the use of earth tubes, an array of buried pipes that use the natural constant temperature of the soil to moderate the ambient temperature of the outside air.

"In simplest terms, there are these grates 350 feet from the building that take in air through pipes that run 350 feet back to the building," explains West. "If that air is 20 degrees, the earth heats it up to 52 degrees. If the air is 90 degrees, then the earth cools it down to 52 degrees."

"The funny story about those is that Neil Marisa (IUOE training site supervisor) grew up on a farm in Somerset County. He told me that his uncle had a dairy farm and always had trouble with the temperature in the milking barn," West recalls. "[Neil's uncle] came up with the idea of digging a trench and putting in terra cotta pipes a couple hundred feet to the barn. Neil said that between the terra cotta pipe and the manure in the barn the temperature never varied more than ten degrees!

"We think we're being revolutionary here with these new ideas and Neil's uncle probably came up with the same idea 50 or 60 years ago," West jokes.

Marisa and Steve Columbus, administrative manager for the Joint Apprenticeship Training Program, were the day-to-day faces of IUOE on the project. West describes the pair as a complementary team, with Columbus shepherding the costs of the project while Marisa engaged the design/construction team about the details.

"Neil was the hammer at the meetings. He would always challenge you," West recalls.

"The other big accomplishment that Steve and Neil deserve all the credit for was operating the program throughout all the demolition and new construction while having apprentices do the work," remarks Jim Kunz. "And Mascaro was very good at solving the problems of coordinating that. There were times when Mascaro had to rely on our apprentices to get critical work done. I thought we would have had some glitches because of that but there really were no problems."

For his part West praised PWWG's team for its responsiveness to issues and credits Kunz with what is the key to solving field issues. "He was a good decision-maker," says West. "If there was a design issue he would sit in the meeting and listen to the suggestions and make a decision. It never went from one week to the next without a decision."

The Operating Engineers formally occupied the new training center on September 12, 2013. The completed facility has a 12,000 square foot classroom and office wing adjacent to the high-bay facility, which has an additional 4,000 square foot mezzanine for training. The classroom building is divided into three large spaces by accordion-type dividers, which recess seamlessly into a wall storage space so that there can be one large classroom or social space. The architecture of the classrooms is well planned, using attractive ceiling designs to break up the room and high-quality details to enhance what is intended to be functional first and foremost.

"We're just buttoning up the LEED submission. As we scaled back the project to a more manageable budget, we wanted to at least be LEED-Certified," notes Pitassi. "But now it might actually be LEED Silver."

West was particularly complimentary with the solutions PWWG designed for the training classrooms. "Mascaro would kill to have that training center," he says. Improving the conditions under which the Operators perform these vital functions is where West draws the most satisfaction from the project.

"You renovate an office building and it looks nice – maybe you do a really nice conference room or something – but at the end of it people are going to work in it just like always. It's an office," observes West. "To see what the Operators had to conduct their training before and compare it to what they have now, that's what's really special."

Sheldon Goettel feels gratified in how the project was executed according to the client's needs. "The [program] was so driven by need, by rationale. We're an office that tries to see architectural possibilities in all aspects of the project," he explains. "We like to work for clients who want to hold onto their buildings for a long time. They can make decisions about the building that pay back in ten years or 20 years."

For Jim Kunz, the new training center is the physical representation of what he sees as a central function of his union for its members. Kunz says that the 105 apprentices accepted in 2014 are part of the largest class ever. Moreover, he explains that the journeyman members of IUOE have come to understand that ongoing training about things like OSHA 10, infectious control and the specialized certification for pipeline and well pad construction is part of the routine for today's operating engineer.

"It used to be hard for journeymen to get training. They have work to do," he says. "They now recognize that those certifications make them more valuable.

"This is a cause I really believe in," Kunz continues. "I'm the first business manager who is a graduate of the apprenticeship training. Between my dad and apprenticeship, that's why I've been successful. The value that we provide is skilled, productive labor. If we don't provide that, then why are we here?" BG

PROJECT TEAM

Operating Engineers Local 66 .... ***Owner***
Mascaro Construction Co. .... ***General Contractor***
PWWG Architects .... ***Architect***
Geo-Mechanics .... ***Engineering Consultant***
John Hall Inc. .... ***HVAC/Plumbing/Fire Protection***
Emcor Scalise Industries .... ***Electrical***
Allegheny Construction Group .... ***Interior General Trades***
Butler Manufacturing .... ***Metal Building Supplier***
A. Folino Construction .... ***Asphalt Paving***
W.H. Stone & Company .... ***Concrete***
Century Steel Erectors .... ***Steel Erection***
Mohawk Construction & Supply .... ***Metal Exterior Panels & Deck***
Tom Brown Contracting .... ***Bituminous Coating***
Densification Inc .... ***Deep Dynamic Compaction***
Howard Concrete Pumping .... ***Mine Stabilization***
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Rebuilding Together Pittsburgh

One of the quietest success stories of the post-recession era in Pittsburgh has been the extraordinary growth of the work of Rebuilding Together Pittsburgh (RTP). Spurred by a desire to lift an outstanding annual program to another level, the board of directors of RTP decided to swim upstream during the downturn to have the organization widen its impact.

The ambitious change in direction was not out of step with RTP's history, however, as the organization had always taken on challenges that might seem too daunting.

Rebuilding Together Pittsburgh was born out of an appeal to the Greater PA Regional Council of Carpenters (now the Keystone Mountain Lakes Regional Council) in 1992. The national office of what was called "Christmas in April" was trying to expand its program into more cities and was putting on presentations. Bill Waterkotte, the executive treasurer for the Carpenters, was then a business agent. His boss, Bob Argentine, asked him to attend a meeting Downtown to hear what Christmas in April was all about.

"I took [another business agent] to the meeting and when it was over he said, 'Well, we can say we went to that,' but I thought this was something we should take on," recalls Waterkotte. "We would need materials and a place to store them so I called Ann Billak from the Master Builders' Association. I thought it would be a good program between labor and the contractors. If she could get the contractors to donate lumber and drywall or whatever and warehouse space, we could get carpenters to volunteer."

Billak, who passed away in 2004, agreed with Waterkotte about the need for Christmas in April and set about lining up contractors. On the last Saturday in April 1993, general contractors had volunteered to provide materials for repairs to nine houses and 75 carpenters volunteered to do the work with the contractors. The day was extremely successful and Waterkotte remembers the feeling of satisfaction that resulted.

"I sad to Ann the following Monday that it had gone great and figured we were done with that. She said we weren't done, that we had started something here that we had to keep going," says Waterkotte.

Ann Billak set up the formal non-profit corporation of Rebuilding Together Pittsburgh, working as volunteer president with Waterkotte as the vice president. They recruited a board of directors from across the industry and began working on growing the volunteer base and adding donors. In 1994, Christmas in April grew to 15 homes. Within a few years, the program grew exponentially, reaching more than 40 homes in a year and nearly 400 volunteers from the trades.

"Nobody could say no to Ann," laughs Waterkotte.

The work done by RTP focused on poor and elderly homeowners who lived in unsafe conditions. Volunteers replaced porches, stairs and handrails, furnaces and electrical service. RTP raised millions over the years, garnering support from some of the largest publicly-traded corporations and smallest private companies in Western PA. The organization put on part-time staff and hired a director, Cindy Gilch, who carried on the work after Ann Billak's untimely passing. When Gilch announced she would retire in 2010, the board used the opportunity to re-think RTP's mission.

Using the six months notice Cindy Gilch had given, RTP's board wrestled with what it wanted for the organization. In the end the board decided that there was a need to expand the number of houses that were repaired each year and to have a greater impact on the houses that they repaired. During the process, it became apparent that such an expanded effort would mean that RTP would be rebuilding more than just one day in April.

Steve Hellner-Burris joined RTP in early 2010 after 15 years as the second in command at Wilkinsburg's Hosanna House. Burris had been the project manager for a $15 million renovation to Hosanna House's main community center and had good relationships with Pittsburgh's foundations. He brought with him some strong ideas about how non-profits should engage the communities and a renewed energy about what RTP should become. RTP's board gave Burris three imperatives: raise more money; fix more houses; and help the people we're helping more deeply. They also accepted that the model of all volunteers had to be expanded.

"What the board said was while [the volunteer effort] was a really important part of who RTP is – and it still is – they wanted to go to scale. You can't go to scale with an all volunteer model," explains Alan Sisco, deputy director at RTP. Sisco joined Burris on staff in October 2010 after five years at the national Rebuilding Together offices in Washington, DC.

Ramping up fundraising proved to be very challenging at first, particularly when approaching charitable foundations. "You have to prove that you'll use the money properly before you'll get the money. It was a steeplechase those first couple of years, improving our management systems for this new model. We had to figure out how to communicate our mission," Sisco recalls. "Nobody ever questions if it's a good idea to help low-income seniors or people with disabilities whose houses are falling apart. That's an easy sell. But impact-wise, sustainability-wise those are questions the foundations ask. That's less easy to articulate."

Foundations applauded the fact that volunteers fixed 45 houses on one day in April but felt that RTP didn't make a difference in any community. "They would say we made a difference for 45 individuals but we're looking for community impact."

Burris' 15 years of neighborhood experience proved extremely valuable in charting the next steps. RTP approached the numerous community development corporations in Pittsburgh and asked what the impact would be of doing 10 or 20 houses in a small area in their neighborhood. Working with the communities, RTP found opportunities at the street and block level that allowed them to impact homes that were most in need that would also stabilize the neighborhood.

"The key was going from the county [level] down to the street and block. That worked on a couple levels," says Sisco. "Foundations liked it because was we were making an impact on communities. It worked for sponsors because they could now bring 50 people or more over the course of three or four days and the corporate experience was improved."

RTP works especially hard at that corporate experience for its sponsor/partners, many of who see the renovations as important ways to show the communities where they are located that they are part of the neighborhood. When a team of people from a sponsor company shows up at its house the morning of a build, breakfast is ready. All the materials are there. Lunch will be on time and a supervisor is there all day to direct the activities of every volunteer.

During the next few years, RTP grew at an accelerated pace. The deeper involvement in communities necessitated hiring outreach staff to identify the homes that would be repaired. Making a greater impact on the homes being repaired meant bringing in professional contractors to do work above and beyond the work volunteers did. It also meant that renovations would be done year round. RTP now has a professional staff of nine, and employs a total of 16, including part-time employees and AmeriCorps volunteers.

The fundraising was equally successful. What RTP calls its "raise and spend" number was $368,000 in 2010. In 2014, that number is $1.65 million. This year the organization will work on 200 homes.

The board and executive team have created a strategic plan for the next three years. RTP has experienced exceptional growth over the past four years, especially in light of the economic conditions. The challenge now is to deepen the commitments to communities. That means that RTP is not actively looking to expand into other neighborhoods that don't fit strategically with its mission. The leadership has become mindful of the fact that overextending its reach could damage the effort of the whole organization.

And they also want to get the message out about the "new" RTP. On October 17, the organization is having its annual fundraiser – now called Impact 2014 – at the Heinz History Center to raise awareness about the new identity of Rebuilding Together Pittsburgh.

"We think that RTP is a stabilizing force for neighborhoods that are transitioning, either up or down. We work in neighborhoods like Sheraden, which is in decline and trying to keep every homeowner. Every resident that leaves Sheraden is a vacant house," Sisco explains. "And we work in neighborhoods like Hazelwood, which is on the way up. Every house that is vacant in Hazelwood will be bought up by a speculator because there is a massive development in the works. We're stabilizing Hazelwood but we're stabilizing it for the long-term residents who have been there 20 years or more. We're helping to preserve their assets so they can take advantage of what's taking place.

"RTP is a neighborhood stabilization activity. We help homeowners stay safe and healthy in their homes. We do that every day. But what is Rebuilding Together's ethos? It's helping stabilize communities to be the place they want it to be." BG

Company Facts

Rebuilding Together Pittsburgh

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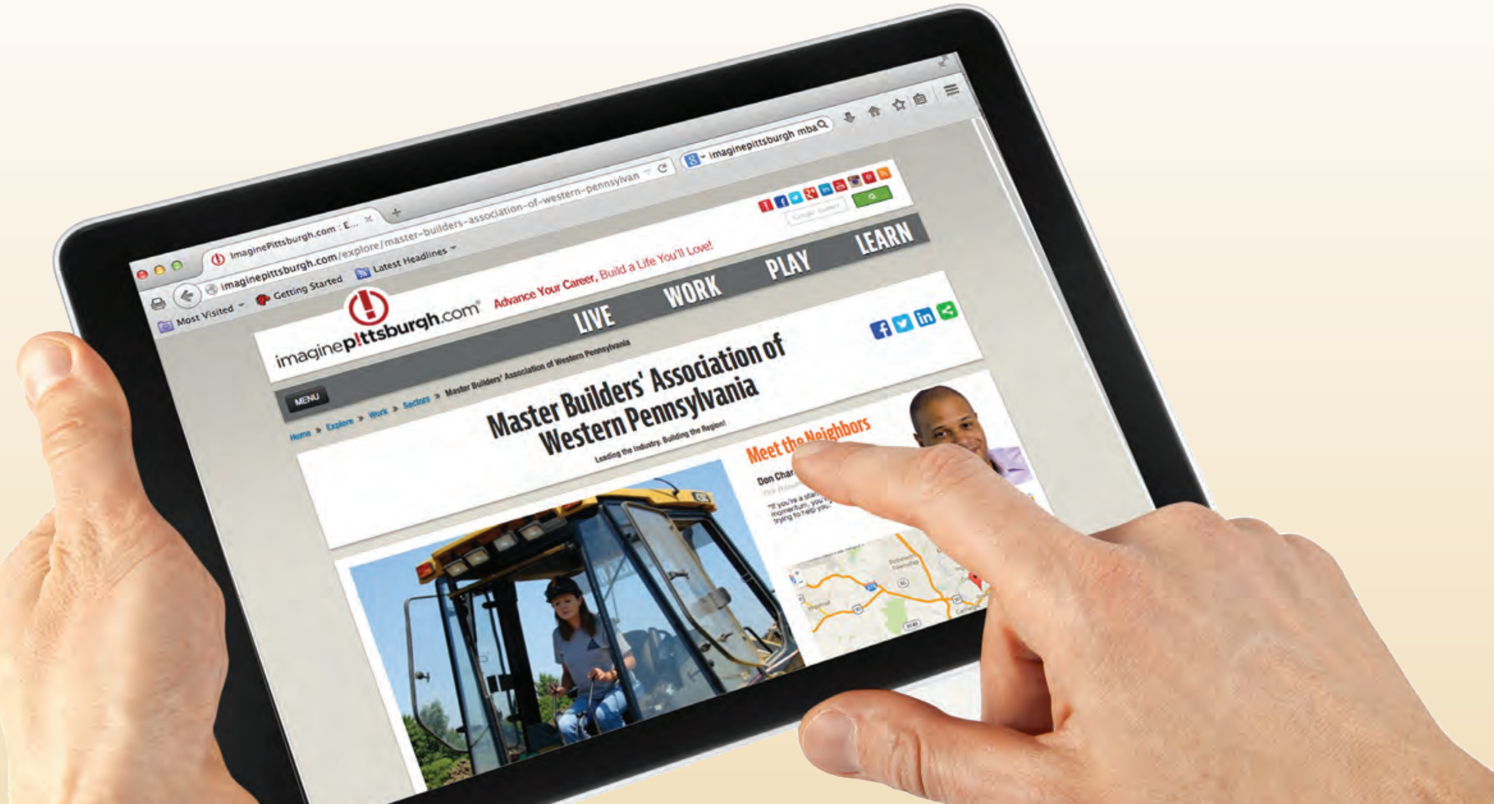

What is the Business Case for Renewables?

The market for renewable energy sources became white hot with the meteoric rise in the cost of oil that occurred in fall 2005 and the first half of 2008. Alternative ways to generate power – usually using solar or wind – had been part of the sustainable solution to energy sourcing for decades or centuries in the case of wind; however, as oil crossed $140/barrel and natural gas hit $13/MBTU, alternative generation technologies blew up.

Half-dozen years later, the construction of new wind farms has halted in Pennsylvania. Solar is a political non-starter after some embarrassing failures. Plants that made fuel from corn or switch grass or used kitchen grease have shut down. The world's energy needs have not declined since 2008 so why did the bottom fall out of the alternative energy market?

Well, in reality the bottom hasn't actually dropped out of the alternative energy market. There are segments that have been hard hit by the change in government regulation or the end of incentives and subsidies. As is often the case, innovators and mad scientists rushed to find solutions to the problem of outrageous fuel prices when the problem reached its crisis point and the long-term practicality of some of the solutions wasn't proven (corn-to-ethanol comes to mind here). But at the end of the day, the demand for energy is growing despite innovations that make for more efficient usage and alternative solutions are among the answers.

What seems to be emerging is an approach that is more holistic and views alternative energy generation as a component to what Chris Klehm calls a "blended solution."

Klehm is Jendoco Construction's vice president of sustainability and director of business development. The business he merged with Jendoco, Energy & Environmental Solutions, consulted with companies from around the world on energy efficiency and green building. Klehm worked on several large casino projects – including the City Centre – in Las Vegas and views the solution to creating a sustainable project as having many components.

"When we worked with Caesar's Palace they looked at renewable as part of the performance of the whole project," he says. "You can't look at energy solutions as a stand-alone thing. It's not only wind or only solar or only anything. I think the ideal solution is going to be a blended one."

That approach would seem to be the right message for the various industries that make up the alternative or renewable energy space. Over the last few years, the prevailing media impressions have been negative. In January, wind turbine manufacturer Gamesa closed down its plant in Ebensburg after several years of declining revenues and layoffs. Bionol closed its corn-to-ethanol plant in Clearfield less than a year after opening in 2010. Solar has probably taken the biggest public relations hits, although it appears the bad press is not entirely justified.

The Solyndra debacle became a poster child for opponents of alternative energy and/or government subsidies. Its failure was one of many in the solar panel manufacturing segment – including solar film maker Flabeg in Allegheny County – that were a result of the glut of Chinese-made panels driving down prices. While the manufacturing of solar was being battered in the U. S., the use of solar arrays has actually been soaring; in fact, two-thirds of all the solar arrays in the U. S. were installed within the past two years.

That growth has been driven by an uptick in adoption from non-residential buildings, explains Mike Carnahan, general manager for Scalo Solar Solutions in Crafton.

"We're busier than ever doing big commercial projects. We're just not doing many in Pennsylvania," Carnahan says. "The resurgence isn't in residential but we are seeing it in commercial because there are better returns on investment (ROI). Commercial owners are getting accelerated depreciation that boosts returns and the price of solar panels has dropped 300 percent in the last few years. The cost of installation is one-third of what it was."

Carnahan calculates that the cost of installed solar is about three dollars per watt, compared to eight dollars per watt in 2008. Such a reduction in investment makes the math more attractive for payback.

"The business case seems to be one of quick, fairly decent paybacks," agrees Klehm. "You're looking at four or five year paybacks of 20 percent ROI. That's the only part of the building that will get that kind of return."

It's important for the solar industry that the ROI gets more recognition, particularly since the payoff is an internal rate of return, not one driven by the creation of energy credits. One of the attractions of alternative energy investments in the past has been the renewable energy certifi-

cates or credits (REC). These RECs were earned for each megawatt of electricity generated by a renewable source (solar-generated credits are SRECs). What made RECs attractive was that they could be earned and sold to electric producers that did not generate using renewable technologies as offsets for the government-mandated share of renewable electricity put on the power grid. In other words, a producer generating electricity at a coal-fired plant could buy RECs or SRECs to offset its non-renewable production rather than building renewable capacity.

Pennsylvania became a hot bed for renewable energy because of the fact that it has high electricity demand, a high share of non-renewable generation and some natural conditions that made renewable generation attractive. Although not a Sunbelt state, PA does have enough sunny days to accumulate SRECs. Its mountain ridges are excellent for wind turbine placement and there are abundant agricultural products for bio-fuel production. What resulted, unfortunately, was that a glut of projects occurred and an oversupply of credits were created. Prices for RECs fell from $350 per credit in 2009 to as low as $20 to $30 in late summer 2014.

As prices were plummeting for RECs, the political winds shifted in Harrisburg and incentives for renewable generation expired or remained low relative to other states. The Commonwealth still has a mandate that 18 percent of electricity consumed in the state must come from renewable sources by 2021, but there is no plan or regulatory ramp up in the interim. The mandate for bio-diesel content remains at two percent while many other states have five or ten percent mandates. These low mandates pushed developers or manufacturers of renewable to look at the Midwest and Southwest for opportunities. And the development of shale gas attracted that industry to Pennsylvania.

"This is Marcellus Shale territory and it's going to stay that way," admits Carnahan.

The result of the unfavorable incentive condition for renewables has been that suppliers have steered clear of PA. Even the low mandated levels have been unmet by sources of renewable technologies. For example, the share of electricity coming from renewable source in 2013 was a mere 1.5 percent, mainly because wind farm development went elsewhere. Biodiesel and ethanol plants don't look to sell in PA.

Market conditions for the latter have actually fallen to the point where a couple of firms have perceived that there is opportunity for a PA supplier. An affiliate of Zeeland Farm Services Inc. purchased the shuttered Bionol plant in Clearfield in 2012 and reopened in 2013 as a full service corn processing plant to supplement the ethanol production. Carnegie-based Weavertown Environmental Group is planning to restart production of biodiesel in Monaca at a plant the company got as part of a 125-acre purchase along the Ohio River in anticipation of the future ethane cracker.

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Ed Vescovi, Weavertown's biodiesel plant manager says the company hopes to see Pennsylvania up its mandated levels of biodiesel in coming years but in the near term sees potential from the current market conditions.

"We produce a pure [biodiesel] product and our customers blend it with their products for their own sales. It's blended with diesel for fuel or home heating oil," he explains. "Pennsylvania's mandate is not even being met by out-of-state sources so there is an opportunity here."

In the final analysis, the best financial incentive for renewable energy has to come from the reduction in electricity costs that resulted from the project. Engineers and the renewable energy supply chain has learned to evaluate the energy needs of a new or existing building differently to create a solution that fits the best performance from the renewable source. Of the technologies in the market that means that solar has a leg up, especially since it offers the versatility that is necessary in the marketplace.

"The talk has moved from sustainable to resilience. What is the energy need and when do you need it? What is the best response? What do we put together that makes the most sense?" asks Klehm. "Solar is the perfect solution for when the demand is high from sun and heat for example. You can get electricity when it's needed instead of firing up those old fossil fuel plants."

Advances in battery technology – like the aqueous storage units developed by New Stanton-based Aquion – are permitting more electricity to be produced by renewable sources at ideal times for the generator and stored until the power is needed. Solar panels or windmills can fill a battery that sits unused for extended periods before being employed to supplement a peak load or power outage situation. And the continued demand from commercial and institutional buildings for solar as an on-site supplement or replacement for electrical power is creating more of a market in Western PA.

"Things just don't change here in Pennsylvania as fast as elsewhere," observes Carnahan. He sees optimism from an opportunity close to home. "You're going to see a developer doing a big [array] on a building right on the Parkway West. There should be an announcement in late September."

That would be the kind of billboard the industry could use. BG

Legal Perspective

Construction Pros Should Understand Lien Law Changes to Improve Chances of Payment

By Joshua Lorenz

There's one law that every construction contractor in Pennsylvania should be watching closely: the one that helps them get paid for their work, also known as the Pennsylvania Mechanics' Lien Law (MLL).

As contractors, subcontractors and owners alike well know, the MLL provides a potential avenue for payment for those supplying labor, materials and equipment to a project by allowing contractors and subcontractors to file mechanics' liens against an owner's property and improvements. A mechanics' lien gives an unpaid contractor or first- or second-tier subcontractor a security interest in the property, which prevents the owner from selling or refinancing the property until all of the liens are paid.

In recent years, however, Pennsylvania courts have delivered rulings in several cases related to the MLL that have surprised construction professionals and changed the ways that contractors and subcontractors sought payment. But in the last 12 months, two court cases and a new amendment to the MLL have helped to clarify some of the more confusing issues related to the MLL. That said, more significant changes to the MLL appear to be on the horizon.

Here are five recent developments regarding the MLL that every construction professional should know and understand:

1. Lenders get paid before contractors on projects funded by open-end mortgages

Many construction projects are financed through open-end mortgages, which allow the property owner to borrow money in increments up to a set limit. Prior to 2012, a lender that owned an open-end mortgage on a property unquestionably was first in line for repayment if the borrower defaulted. Contractors and subcontractors who filed mechanics' liens against the property only received payment after the lender's mortgage had been satisfied fully.

But in 2012, the Pennsylvania Superior Court's ruling in Commerce Bank/Harrisburg v. Kessler changed the established order of repayment priority. In that case, the Kesslers took out an open-end mortgage to build a new home. Later, the Kesslers were unable to pay their mortgage or contractor and filed for bankruptcy. Both the bank and the contractor filed liens and obtained default judgments against the Kesslers.

Typically, the bank's open-end mortgage would have had repayment priority over the contractor's mechanics' lien. But surprisingly, the Superior Court held that the MLL only gave lenders payment priority if the borrower used 100 percent of the borrowed money to pay for construction costs. Because the Kesslers used some of their loan to pay other expenses not directly related to construction, the Superior Court ruled that the contractor should be repaid before the bank.

While the ruling may have seemed like good news for contractors, it had an overall negative effect on new development projects. Lenders became more reluctant to grant open-end mortgages and enforced stricter loan terms. Borrowers also had less flexibility to use their financing.

Because the Kessler decision caused so much apprehension, Pennsylvania's legislature created a new amendment to the MLL. This amendment, known as Pennsylvania Act 117 of 2014, clarifies that lenders that give open-end mortgages are first in line for payment provided that at least 60 percent of the borrowed funds are used for construction costs. This amendment also defines the specific items covered by the term "costs of construction," which include insurance, inspections, closing fees, legal fees, consulting fees and other "soft costs."

Contractors who want to file a mechanics' lien should make sure that they do so within six months from the completion of the work, not necessarily the last day on the job site.

These changes affect all mechanics' liens perfected on or after September 7, 2014.

2. Subcontractors will have a harder time filing mechanics' liens

Subcontractors often file mechanics' liens against a property owner if they have not been paid for their work. In some cases, however, the property owner already paid the general contractor for the job, but the contractor failed to pass along payment. Thus, some owners ended up paying for the same work twice. For residential property owners in particular, the financial impact could be devastating.

Act 117 to the MLL allows residential owners to discharge mechanics' liens filed against them by subcontractors if the owners can prove that they already paid the general contractor in full. While the new rule protects residential property owners, it takes away some of the rights afforded to subcontractors under the MLL.

Subcontractors still can file mechanics' liens against commercial property owners and against residential property owners who have not fully paid the general contractor.

3. Unions don't qualify as subcontractors

Over the past few years, there has been significant confusion in the construction industry about whether union workers are considered subcontractors, which would give them the ability to file mechanics' liens.

The controversy stems from the case of *Bricklayers of Western Pennsylvania Combined Funds v. Scott's Development Co.* in which a developer hired a contractor, who then hired workers through collective bargaining agreements with two unions. In these labor agreements, the contractor agreed to make contributions to the unions' benefits plans. The labor agreements referred to the union workers as "employees" and the contractor as the "employer."

When the contractor failed to pay the contributions, the trustees of the union benefit plans filed mechanics' liens against the property owner. The owner refused to pay the debts, arguing that the union trustees could not file mechanics' liens because the workers were employees, not subcontractors, and therefore had no mechanics' lien rights.

The Pennsylvania Superior Court surprised many people in 2012 when it ruled that the union workers were actually subcontractors with lien rights because the collective bargaining agreement served as a contract to perform work.

But in May 2014, the Pennsylvania Supreme Court overturned that decision, ruling that the union workers were in fact employees, not subcontractors. The mere presence of a labor agreement does not re-classify employees as subcontractors.

4. Lien deadline is six months from completion, not last day of "work"

The MLL gives contractors six months from the completion of a project to file a lien. The law was unclear, however, about which day is counted as the final completion date if the contractor later returns to the job site to correct any errors.

In a recent case, a property owner in Cumberland County terminated a construction contract before the building was completed. After entering into a termination agreement with the owner, the contractor returned to the job site to correct deficiencies. When it wasn't paid for its work, the contractor filed a mechanics' lien within six months of completion of the remedial work.

The Cumberland County Court of Common Pleas dismissed the mechanics' lien, ruling that the six-month period started on the day the termination agreement had been signed, not on the last day the contractor performed remedial work. By the time the contractor filed its lien, more than six months had passed since the signing of the termination agreement. On appeal, the Pennsylvania Superior Court affirmed the lower court's decision.

Contractors who want to file a mechanics' lien should make sure that they do so within six months from the completion of the work, not necessarily the last day on the job site.

5. New amendments may create lien directory, additional notice requirements

While not yet finalized, Pennsylvania House Bill 473 of 2013 (HB 473) may soon bring new changes to the MLL.

HB 473 proposes that the Pennsylvania Department of General Services (DGS) establish a new centralized database, called the State Construction Notices Directory, for all projects valued at $1.5 million or more. The directory would be an important tool for project owners who want to limit their liability for mechanics' liens.

Before beginning an eligible construction project, the project owner may choose to file a "notice of commencement" with the central directory and display the notice at the job site. Any subcontractors that work on the project must then file a "notice of furnishing" within 45 days of first performing work or providing materials on the project, or else they forfeit their mechanics' lien rights.

Any project owner that files a notice of commencement may also file a "notice of completion" within 45 days of completing work on a project. Upon completion of their work, subcontractors would have the opportunity to file a "notice of nonpayment" with the directory, thus advising everyone of a potential claim.

Of particular note, HB 473 would make it a second degree misdemeanor crime for an owner, owner's agent, contractor or subcontractor to suggest or require that a subcontractor not file a "notice of furnishing" as a condition of working on a project. In that case, the subcontractor would not only have the right to file a mechanics' lien, but also could file a civil action for any damages sustained.

HB 473, currently in its fourth version, now is before the Pennsylvania Senate, and there may be additional changes before it becomes law.

These recent legal developments should help to clarify many of the construction industry's ongoing concerns about the MLL. Construction professionals should keep a close eye on the law to ensure that they follow best practices to improve their chances of getting paid for projects in an ever-changing landscape.

Joshua Lorenz is a partner at Pittsburgh-based law firm Meyer, Unkovic & Scott LLP and is co-chair of the firm's Construction Group. He can be reached at (412) 456-2836 or jrl@muslaw.com. BG

MBE/WBE Company Spotlight

Sci-Tek Consultants Inc.

On August 21, Sci-Tek Consultants was recognized as one of the Top 100 Fastest Growing Companies in the region, coming in at number 60 with revenue growth of more than 47 percent. The firm's founder and president, Charles Toran, describes the growth of his business as "slow and deliberate, not meteoric," although the pace of growth during the past three years more closely resembles the hare than the tortoise.

Charles Toran

Once that entrepreneurial spirit takes hold of you it's tough to shake.

When asked about his growth plans for the coming decade, Toran elaborates on his self-evaluation. "That's a good question. I think I look at doubling as the benchmark over the next five or ten years," he says. "I don't think I'm as skilled or knowledgeable enough to have meteoric growth but I think doubling in size and revenues is about right."

Sci-Tek's success and growth since its founding in 1996 has been due in part to Charles Toran's candid self-assessment. His path into business was not unusual. Toran chose self-employment over corporate employment after a layoff. But his approach to unemployment in 1996 was unorthodox. After graduating from the University of Pittsburgh with a mechanical engineering degree, Toran worked for ten years with Westinghouse Electric's nuclear and environmental groups before being laid off. He then did environmental engineering for Chambers Development for three years before that company shut its doors. As he was looking for another job, Toran felt pulled in another direction.

"I started looking for another job as anyone would. Eight of my 13 years was in environmental engineering so I was looking for something in that field but wasn't satisfied with what I saw," he recalls "The funny thing was that for some reason I would look at the business opportunity section as well as the classifieds. I saw all of these ideas and people starting their own businesses and I thought well why not. Once that entrepreneurial spirit takes hold of you it's tough to shake. After a while I was only looking at that section. I don't even know what I was looking for but I was getting ideas and concepts from people who had started a business."

"I learned early on that you have to satisfy your clients and in order to do that you have to see things from their point of view, not yours,"

He decided to start his own environmental firm. After writing a business plan and investing seed money, Toran got a Small Business Administration loan and opened an office in Uptown, rather than working from his home. "I knew myself. If I had started off working from home in my pajamas I would probably still be there," he admits. Sci-Tek's first commissions involved doing environmental permitting for small businesses and grew to doing general environmental consulting.

In those early years, as business grew, Toran staffed up and used the abilities of his team to expand the scope of Sci-Tek's services.

"I had a lot of civil engineers on staff with other talents and we began to morph into more of a civil and environmental firm," he explains. "About seven years ago we had about 20 employees and I realized I was in over my head. I couldn't be the engineering manager and do all the business development, let alone be the guy doing payroll and paying the bills. I hired an engineering manager who had a background in geotechnical so he brought that along with him."

Sci-Tek Consultants offers services in those three main disciplines, providing civil, environmental and geotechnical engineering. Their largest business segment is water and sewer infrastructure, working for Pittsburgh Water and Sewer Authority, ALCOSAN and the Philadelphia Water Department among others. Aviation is another big segment, working at both Pittsburgh airports, as well as Philadelphia International. The third biggest sector is higher education, doing civil and site design working for architects.

In 2011, one of the firm's clients was experiencing trouble finding good quality sub-consultants in Philadelphia and asked if Sci-Tek would be interested in working with them out there. Understanding that it would be difficult to keep the client happy from Pittsburgh, Toran decided to open an office in Philadelphia.

"I knew we couldn't work with them properly from here so I made a physical presence, established an office out there and hired a local guy to run it," he says. "It was a bit of a roll of the dice but that's the nature of the business."

Born and raised in Baltimore, Toran remained in Pittsburgh after getting his first job and marrying a woman from Pittsburgh. "Once that happened and we had kids there was no question of leaving Pittsburgh. I guess I could have left but would she have followed is the question," he jokes. The business risks associated with opening an office 300 miles away from his home base were nothing compared to the personal ones.

"Mom is very upset. I think she's speaking to me now that it's been three years," Toran laughs. "When she found out we were expanding in Philadelphia not Baltimore she was upset. I tried to explain to her that it wasn't that simple. We had a client who said if we came there we'd have work. I couldn't go to Baltimore without some anchor, something to connect with down there but Mom isn't buying it. Every time I go home she reminds me of it."

Sci-Tek Consultants now has 35 employees between the two offices. In addition to Charles Toran, the company is managed by Gary Van Balen, engineering manager in Pittsburgh and Tom Munlyn, Philadelphia office manager. Toran's wife Veronica manages the administration of the business, overseeing human resources, payroll and accounting departments.

Charles Toran sees the recipe for continued growth for Sci-Tek in the satisfaction of his clients and his staff.

"I learned early on that you have to satisfy your clients and in order to do that you have to see things from their point of view, not yours," he explains. "The other thing is that we're a small firm that competes with larger firms. We can't compete on all fronts so we've learned to be creative with employee recruitment and retention. We try to do things that the big firms can't do to try to attract or retain top talent. And that's key.

"A lot of what we do is relationship driven so you have to work to establish or preserve those relationships. Without them, the client is going to look for someone else." BG

Company Facts

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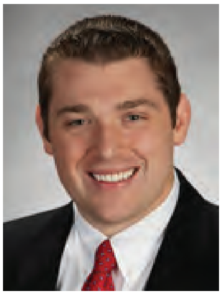
Babst Calland proudly welcomes attorneys Robert M. Palumbi and Dylan B. Spadaccino to our Construction Services Group. Bobby and Dyan continue to expand the breadth and depth of services we provide to our construction-industry clients. Bobby is admitted to practice in Pennsylvania, New Jersey and West Virginia with experience in a variety of construction law issues, including payment disputes, mechanics' liens, construction defect cases, and litigation involving energy and natural resources projects. Dylan is admitted in Pennsylvania, New Jersey and Texas and has similar extensive experience in construction law. Prior to becoming a construction attorney, Dylan owned and operated a commercial demolition company in Philadelphia, Pennsylvania.



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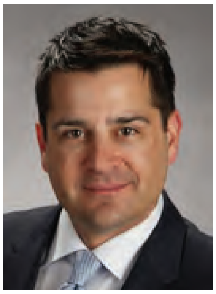

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Keeping the Lights On: The Federal Government Lacks a Comprehensive Strategy to Maintain Electric Grid Stability and Reliability

By Kenneth Zapinski

When the polar vortex struck in January, Pennsylvania and its neighboring states came within a whisker of having the demand for electricity outstrip the available supply.

And we were the lucky ones.

In South Carolina, tens of thousands of customers were subject to rolling blackouts because there wasn't enough power to go around when cold weather knocked out several key power plants.

A big problem in the PJM Interconnection, the grid that serves Pennsylvania and all or parts of 12 other states plus the District of Columbia, was that natural gas power plants intended to provide electricity during periods of peak demand couldn't get any fuel to burn as it was diverted to heat homes, schools, and hospitals.

So what kept the lights on in January? A significant number of coal-fired power plants that are scheduled to be retired in a few months as a result of electricity market failures and new regulatory restrictions were still available.

What happens next time? That's a good question. Unfortunately, the answer isn't clear.
Today, the electricity service that we take for granted is under stress. Market dynamics, inadequate transmission infrastructure, too few new power plants, and new federal environmental regulations are combining to call into question something all of us take for granted -- that when we throw the switch, the lights will go on.

The federal government has no overall plan to ensure the stability of the grid. Instead, it has taken a series of piecemeal and ad hoc actions without a full understanding of how they interact and impact the electricity grid. And the past winter proved how vulnerable our electricity supply has become.

"This winter has demonstrated that our margin of surplus generation is narrower and more constrained than many understood," said Philip D. Moeller, a commissioner at the Federal Energy Regulatory Commission, which oversees national grid operations.

Many of the critical energy questions facing this country will wind up impacting the electrical grid, which is the foundation of our modern society:

What happens when we require quick reduction in carbon emissions from coal or other energy sources when fossil fuels provide 70 percent of our electricity?
What should our nuclear power policy be in a post-Fukushima world?

How do you integrate intermittent sources like solar and wind into the grid, which needs to operate all the time?
How do you store energy from renewable to displace other energy sources?

Big questions, with very real world impacts. Or as FERC Commissioner Moeller put it when he testified at a Senate hearing on grid reliability earlier this year: "Given that public policy aspirations cannot violate the laws of physics, we need to act carefully in transforming the power grid."

The unique nature of how the electric grid is constructed contributes to the challenges it faces. It is quite unlike any other network that we use in our daily lives. When too many vehicles crowd onto a highway, we are forced to inch our way forward in a traffic jam. And when all those drivers get on their phones to call ahead and say they're going to be late, the cell tower is swamped, and some calls get dropped or some customers can't get a signal. Nobody likes it, but we accept it.

Not so with the electric grid. It's built to deliver however much power is needed at exactly the moment that it is needed. It's as if the Parkway West and the Fort Pitt Tunnel were built with eight lanes in each direction, with the lanes opening and closing as necessary so as to prevent any traffic jams.

PJM relies on nearly 1,400 power plants to serve the 60 million customers in its service area. Together, those power plants can produce 186,000 megawatts of electricity, and on January 7, PJM came within roughly 900 megawatts of not having enough standard-voltage power, or about 0.4 percent of overall capacity. That's the equivalent of just one more large power plant shutting down for mechanical problems, scheduled maintenance, or a lack of fuel – the kind of circumstances that all contributed to the January problem.

"The system bent but it did not break," FERC Chairwoman Cheryl LaFleur told attendees at an industry technical conference earlier this year. "Reliability was sustained, but at times was very close to the edge."

"This country did not just dodge a bullet – we dodged a cannon ball," Akins told the Senate Energy and Natural Resources Committee. "AEP has been sounding the alarm on long-term reliability for several years now and time is running out."

To keep working, though, the system had to rely on generating plants that won't be available in the future. Nicholas K. Akins, CEO of American Electric Power, testified to the Senate in April that 89 percent of the coal-fired power plants that the company intends to shut down next year were needed by PJM during January's polar vortex.

"This country did not just dodge a bullet – we dodged a cannon ball," Akins told the Senate Energy and Natural Resources Committee. "AEP has been sounding the alarm on long-term reliability for several years now and time is running out."

Supplies under stress

Solar and other renewables will be part of the solution in the future. But they do not yet have the utility-scale storage technology that is necessary to power an economy. Meanwhile, conditions keep changing, rapidly and for the worse.

Together, coal, natural gas, and nuclear power account for 85 percent of the country's electricity generation. And all three sectors are under stress.

Consider coal. The EPA is currently considering greenhouse gas regulations that would lead to less coal being used to generate electricity. But the EPA never asked the grid experts at FERC for a formal assessment of how the proposal would affect grid reliability.

The proposed carbon regulations come in the wake of new mercury and air toxic rules for coal-fired power plants. When the EPA proposed those rules in 2011, it predicted that coal plants with a total capacity of 10,000 megawatts would shut down as a result.

Actually, the North American Electric Reliability Council projects that more than six times as many coal plants – 62,800 megawatts – will retire over the next decade as a result of the mercury rule, new carbon regulations, lower natural gas prices, and market dynamics.

The EPA expects new natural gas-fired power plants to take up some of that slack, thanks to the abundant supplies in the Marcellus, Utica, and other shale formations around the country. But access to that natural gas could be threatened as local and state governments consider measures that could ban or severely restrict drilling. Even the EPA is considering moves that could ultimately reduce gas supplies.

New nuclear power plants are almost impossible to finance and permit in this country. Meanwhile, new federal regulations in the wake of the 2011 nuclear plant disaster in Fukushima, Japan, could make it more expensive to continue to operate existing nuclear plants. At the same time, current regulatory price mechanisms don't take into account the constant reliability of a nuclear plant or, if you're interested in reducing carbon emissions, the carbon-free nature of nuclear power production.

In Wisconsin, for instance, market distortions resulted in the Kewaunee nuclear power plant having to pay the transmission system to take the power it produced. So the plant's owner shut it down last year – 20 years ahead of schedule – and in the process wiped out five percent of the state's electric supply.

The Kewaunee shutdown and the potential for dozens of others to follow "is a trend we are clearly very, very concerned about," according to DOE's Assistant Secretary of Nuclear Energy Dr. Peter Lyons.

Financing the grid

Your electric bill includes three different components, each of which touch on aspects of grid reliability. A customer pays for the amount of power they use. But they also pay a charge for building and maintaining the wires

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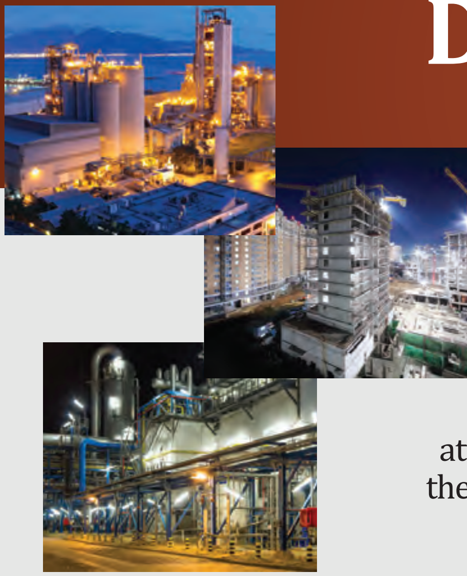

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(open to members and nonmembers)

Sept 24	Connect with CREW, Six Penn Kitchen
Sept 30	Tour the Clark Buidling with CREW Pittsburgh (Members Only)
October 14	Lunch and Learn at One PPG Place (Members Only)
October 23	Annual Wine Dinner, Rivers Casino
October 28	Lunch Program - Finance, Engineers' Society of Western Pennsylvania

that carry that electricity. And they also pay a kind of insurance to keep power plant capacity available that sits idle most of the time but can be switched on during peak demand, averting blackouts.

But as the economy has changed and as different states have pursued a variety of deregulation measures, that business model has started to unravel, taking our margin of reliability along with it.

Peak demand remains at record levels. But overall electricity demand isn't back to where it was pre-recession.

Part of that is a result of industrial companies closing their doors. But it is also the result of remaining companies implementing energy efficiency measures to do the same amount of work with less power. Add in residential customers who are generating increasing amounts of their own power through home-based windmills and solar panels, and electric company margins are being squeezed.

Why does it matter whether an electric company can make money? Because our system relies primarily on those private-sector companies to build the transmission wires and the power plants that keep us supplied. Governments regulate the process, but the private companies do the heavy lifting.

Consider what has happened in PJM over the past five years.

The price received for each kilowatt of power used is down 45% over the past five years. And the capacity payment – the insurance part of the electric bill– has dropped 13% over that same time. More importantly, it has fluctuated as much as 22% up and down year-to-year during that same period.

How can a company invest hundreds of millions of shareholder dollars to maintain existing plants or build new ones based on such unreliable revenue streams? It can't. That's why PJM and other grid operators have increasingly relied less on actual power plants that can produce electricity when needed and more on voluntary conservation measures and power imports from other parts of the country – which assumes those areas will have excess capacity in times of crisis.

All of the complex forces affecting grid reliability hit the Pittsburgh region last year when FirstEnergy Corp. shut down the

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Hatfield's Ferry and Mitchell coal-fired power stations. Together, they could produce more than 2,000 megawatts of power. But FirstEnergy shut them down, citing increased competition from low natural gas prices, the increased operating expenses resulting from new federal environmental regulations, and low capacity payments.

For the company, it made financial sense. But it meant that the plants were not available when the polar vortex hit in January. Had they been online, PJM's reserve buffer available would have tripled.

The Road Ahead

In a matter of months, a power plant can be retired. But it takes years for major power plant construction projects, natural gas supply pipelines, and electric transmission lines to make their way through the labyrinth of federal, state, and local rules and regulations, without any clear way to speed up the process.

That means that by the time the grid problem becomes obvious to customers on the street, any solution will be years away.

The U.S. needs a national grid policy and a comprehensive action plan to ensure an adequate, affordable, and reliable electricity supply. The Allegheny Conference is asking the President to stop ad hoc regulation and changes to the electrical system and appoint a task force with representatives from the EPA, the Department of Energy, the Nuclear Regulatory Commission, the Federal Energy Regulatory Commission, public utility commissions, regional transmission operators, electric generating companies and others to develop such a plan.

The reliability of the electric grid is so fundamental to our economy and to the well being of our people that it should be a principle that can connect all sides in the conversation about our energy future.

Ken Zapinski is Senior Vice President for Energy & Infrastructure for the Allegheny Conference on Community Development.

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Passive House Science

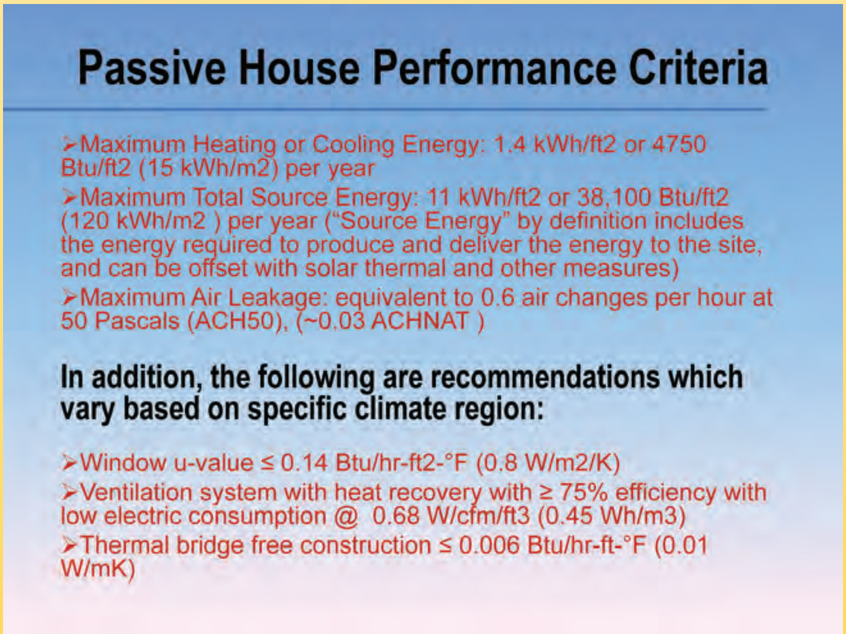
By Jon O'Brien

Odds are very high that if you are a regular reader of BreakingGround magazine that you are familiar with green building certification programs. After all, these sustainable programs have been around for decades. One could debate that Pittsburgh is the birthplace of green construction certification with the first LEED pilot projects - The Greater Pittsburgh Food Bank and KSBA Architects – located here.

After an informal survey of the MBA membership, it was determined that the primary green certifications in the region include: LEED through the U.S. Green Building Council; Green Globes through the Green Building Initiative; and The Living Building Challenge, which is administered by the International Building Institute. As a side note: On the morning of September 23, 2014, at the MBA, the association's Green Builders Committee is hosting an informational seminar on the three listed certifications – visit www.mbawpa.org for more information.

While there are competing green certification programs that are applied in our region, these programs can co-exist due to sustainable champions like the Green Building Alliance, a chapter of the U.S. Green Building Council. The GBA helps to keep the region in the leadership role concerning sustainability and high-performance buildings by focusing on education of green programs that aim to improve the environmental impact of our buildings. This educational effort focuses on the more recognizable certification programs and the lesser known ones too. One in particular that may not yet be widely known but has been increasing its visibility in the region is Passive House.

Passive House is a performance-based building standard which focuses on three criteria: 1. Primary energy demand; 2. Annual heating/cooling demand; 3. Airtightness. Simply put, Passive House is a performance-based building standard that can result in a building that reduces its energy consumption by as much as 90 percent.



The origins of the movement are in Germany, where the ideas coalesced into the Passivhaus Institute. The direct translation into English is Passive House but the principles apply equally well to both non-residential and residential buildings. The technical support and certification for Passive House is done by the Passive House Institute of the U. S. (PHIUS), while advocacy and awareness are promoted by Passive House Alliance of the U. S. (PHAUS).

The five principles of Passive House are:

- Continuous Insulated Envelope – airtight compact building shape, thermal-bridge-free minimizes

The Hilltop Community Healthcare Center in the Beltzhoover neighborhood was renovated using Passive House standards. Photo by Denmarsh Photography. Used courtesy Thoughtful Balance Architecture.

transmission losses/gains relative to usable floor area (surface-to-volume ratio) and eliminates condensation in assemblies.

• High Performance Windows & Doors – optimal solar orientation, shading and modest window areas optimize moderate solar gains.

• Constant Fresh Air Supply – a balanced mechanical ventilation system with heat and/or moisture recovery applies to most climates.

• Managing Internal Loads – efficient appliances, lighting and plumbing minimize sensible and latent loads and internal heat gains.

• Renewables – zero out site, source or carbon through small optimized active PV or wind system.

In practical terms, Passive House is intended to retain as much of the building's energy and take advantage of as much "free" energy by strategically orienting the building and using the ambient temperature of the exhaust air from the building to act as a heat exchanger or chiller for the fresh air. Once occupied, a Passive House building will use equipment and appliances that use the least energy possible.

To become a Passive House certified building there are critical benchmarks that must be achieved (Figure A). Failure to meet the benchmarks means the building is not achieving optimum performance and as a result it will not receive Passive House certification. This certification process uses whole-building simulation software to measure performance of many variables such as size of structure, number of inhabitants and orientation.

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"The sustainable supporters should be grateful for pioneer organizations like the U.S. Green Building Council and their marketing efforts of LEED; this group was a game-changer and they deserve a lot of credit," ...

"It is not a difficult process, even though to some it may appear that way," said Craig Stevenson, executive vice president of James Construction and Certified Passive House Consultant. "This certification process demands performance which is different from other historical, prescriptive based sustainability programs."

Despite being considered by some as the most stringent building energy standard in the world, there are some local commercial projects that have been built, or currently under construction, that abide by the Passive House standard, like: Uptown Lofts on Fifth Avenue, Hilltop Community Healthcare Center, and the renovation of the former McKeesport YMCA into an 84-unit center to house homeless individuals. Two of the three projects were built by ACTION Housing, a leading advocate of Passive House in our region.

"Three years ago I had the chance to go to Germany and spend time in Berlin and Freibug to see the abundance of Passive House buildings. When we returned to the U.S. and within a month I had the opportunity to meet Katrin Klingenberg (executive director of the Passive House Institute U.S.). This was really a beneficial educational process for me," said Linda Metropulos of ACTION Housing. "Shortly thereafter we started working on a house in Heidelberg. Then after this residential project we completed two more Passive House projects – the YMCA renovation in McKeesport and a 14,000 square foot community center in Hazelwood."

Getting an owner to lead the charge on Passive House was the boost this issue needed. Metropulous explained their attraction to Passive House: "We are all about two things: one, high performance buildings; and two, healthy interiors that feature fresh air for residents. With Passive House, we can focus on what's important – our projects – and we do not have to be distracted from our projects by worrying about third party verifiers and formulaic methods.

"The sustainable supporters should be grateful for pioneer organizations like the U.S. Green Building Council and their marketing efforts of LEED; this group was a game-changer and they deserve a lot of credit," Metropoulos continued. "However, if we are going to make a significant impact on the existing building stock then we need to focus efforts on building envelopes and energy usage. We are fortunate that the local contracting community can help us work toward our mission as they are willing to learn new tricks and learn from their experiences."

Mark Whartnaby is partner at Thoughful Balance Inc., the architects for virtually all of the Passive House projects built in Pittsburgh. He points out that clients interested in Passive House shouldn't view their project as an "either or" prospect for LEED or Passive House.

"If you look at LEED, [certification] is trying to identify all the strategies that can be brought to bear to make the building more sustainable," Whartnaby noted. "Energy is an important piece but so are the material selections and water conservation, all aspects of the project. Passive House is focused on energy."

Locally, the Passive House movement is picking up momentum. More construction projects are being built to this standard and the constructors are learning as they go. It is also benefiting the movement by teaming with the Green Building Alliance to create educational opportunities to raise the issue's awareness in the region. The newly Passive House Western Pennsylvania (PHWPA) is the local chapter of the PHAUS. For more information on PHWPA visit www.passivehousepa.org.

Jon O'Brien is Director of Industry Relations for the Master Builders' Association. He can be reached at 412-922-3912 or jobrien@mbawpa.org. BG

Learn more about NAIOP in the western Pennsylvania tri-state region at **naioppittsburgh.com** or **412-928-8303**.

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INDUSTRY & COMMUNITY NEWS

Builders Exchange and Habitat "Sponsor a Day Build"

On Thursday, July 24th, the Pittsburgh Builder's Exchange (PBX) pulled together the knowledge and skills of 15 members to help a family in need through Habitat for Humanity's "Sponsor a Day Build." PBX members from various construction disciplines donated their time to rehab a house in West Mifflin for a single mother and her four children. The family recently escaped from an abusive home. Through the combined efforts of our volunteers and Habitat for Humanity, we will be able to move this family from their current poor living conditions to a real home.

"With the talents of our members, Habitat for Humanity was a natural fit with our organization," said Brad Bridges, President of the PBX and a strong proponent of this program. "Projects like this make us appreciate how truly fortunate we all really are."

PBX Executive Director Del Walker and President Brad Bridges (kneeling) lead a team of volunteers to rehabilitate a home with Habitat for Humanity.

AIA/MBA Honor Angelo Martini Sr.

The AIA/MBA Joint Committee selected Angelo Martini Sr., CEO of A. Martini & Company as the 2014 recipient of the James Kling Fellowship Award. The award recognizes individuals from the design and contracting professions who have demonstrated a commitment to collaboration between architects and contractors. Mr. Martini was nominated for the honor by Daniel Delisio, owner/founder of NEXT Architecture.

Angelo Martini Jr. (left), Angelo Martini Sr. and Anthony Martini.

Dan Delisio, NEXT Architecture with James Kling Fellowship honoree Angelo Martini.

(From left) Stantec's Chuck Parker, IKM's Mike McCullough and Greg Madej from DRS Architects at the AIA/MBA James Kling Fellowship presentation.

dck worldwide Lending a Helping Hand

dck worldwide's corporate office recently donated time and materials to assist the Sarah Heinz House (the 100-year-old Boys and Girls Club in Pittsburgh) address a list of maintenance and safety issues at its summer camp that they had been unable to fund. dck coordinated efforts with Mascaro, Massaro, and multiple subcontractors in the Pittsburgh area to arrange for over $30,000 of donated time, material, and equipment. At a July 2014 Volunteers of America event held in Pittsburgh, dck worldwide's Elizabeth Bowers presented a Pricing Workshop to small business owners as part of dck's Small Business and Community Outreach program.

dck worldwide employees participated in the Highmark Caring Place Celebrity Golf Outing. Gary Vozel, Electrical Estimator, and Tom Salopek, Senior Pre-construction Coordinator, (second and third from left) golfed with Mike Adams(right) and David DeCastro (left) of the Pittsburgh Steelers.

The PJ Dick group at the PBX golf outing at Cranberry Highlands included (from left) Dave Tilves, Eric Pascucci, and Bill O'Toole with Jeff Zacherl from Johnson Controls (second from left).

Curtis Gill (left) with AMB's Brian McCay at the PBX Outing.


(From left) Bob Dezort from Anderson Interiors with Jeffrey and Tom Landau and Allen & Sharif's Paul Messineo Jr. (back right) at the NAIOP/CREW Clay Shoot.


The MBA's Jack Ramage (left) with Joe Bosick from Pietragallo Gordon Alfano Bosick & Raspanti and Rocky Bleier (right).


Angelica Cirrani from the Sports & Exhibition Authority with GBA's Sean Luther at the GBA's member river cruise.


Lisa Wampler from Cohen Seglias (left) with Phoenix Roofing's Bruce Bartholomew and wife Nancy, and Joe Scaramuzzo from Burchick Construction at the ASA golf outing at Chartiers Country Club.

Deborah Hersman, president and CEO of the National Safety Council visited Mascaro Construction's job site at the headquarters for Industrial Scientific, under construction in Robinson Township. Pictured with Ms. Hersman (in blue third from right) are Industrial Scientific President/CEO Justin McElhattan, Mascaro Safety Coordinator Amanda Presto, Mascaro Superintendent Chris DiBon, Industrial Scientific Chairman and Co-Founder Kent McElhattan (in orange) and Industrial Scientific Vice-President, Customer Operations Garth Miller.

(From left) Babst Calland's Kurt Fernsler, John Paul Busse, Joe Burchick and Greg Heineman from NVR at the PBX clay shoot.

The Builders Exhange's John Nutt (left) and Del Walker (in blue) with Dan Vater from A. J. Vater and NILCO's Dan Fryz at the PBX golf outing at Bird's Foot.

Don Lampus Jr. (left) and Don Lampus Sr. host shooters Ryan Zampogna and David Ziccarrelli (right) at the Builders exchange clay shoot

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Awards & Contracts

Uhl Construction was the successful contractor for Baierl Ford's new $5 million dealership in Zelienople. The project includes renovation of a former 17,500 square foot dealership building and construction of a new two-story, 40,000 square foot facility, along with extensive site work. The architect is RSSC Architecture.

Eat 'n Park Hospitality awarded a contract to FMS Construction for the Hello Bistro build-out in downtown Pittsburgh at Forbes and Wood.

Mascaro Construction was the successful contractor for second phase of the Crown Castle headquarters in Southpointe. This phase is a $4 million, 560 lineal foot connector between Crown Castle's existing office building and the former Mylan headquarters, which is being renovated. Astorino is the architect.

McCrossin Inc. is the successful contractor on phase 1 of the Centre County Rear Courthouse Annex and Taylor Courts Building project. Albert A. Drobka is the architect for the $750,000 project.

Marks-Landau Construction, a wholly owned subsidiary of Landau Building Company, was recently awarded the Simpson Elementary School Addition and Renovation project in Bridgeport, WV. The project began in June 2014 and includes a 9,000 sq. ft. classroom addition that will be built in phases throughout the school year. The expected completion date is August 2015.

Landau Building Company began renovations to Bayer Medical Care in Indianola, PA in May 2014. The 14,000 sq. ft. interior fit-out will transform the existing labs into new executive offices. A renovated bathroom, complete with showers and quartz countertops, and a new entrance canopy will also be constructed. The anticipated completion date is September 2014.

Robert Morris University awarded the contract for construction of its $6.5 million new School of Nursing to Landau Building Co. Astorino is the architect for the 28,000 square foot new facility to be built at RMU's Moon Township campus.

Mosites Construction Co. was the successful bidder to the Pennsylvania Department of Transportation for the $14.1 million renovations to the Fort Pitt Tunnels.

Massaro Properties, LLC is the developer for the second phase of Synergy Health (formerly Beam One). The 25,000 square foot sterilization facility, located in Saxonburg, utilized the services of Massaro Design Build, LLP to design and build the new pre-engineered building. Construction began in mid-July and will be connected to the original building, also designed and built by Massaro. Anticipated project completion date is February 2015.

Massaro Corporation was awarded the tenant fit-out project for the HHF office located in One Oxford Center. The 9,600 square foot office was designed by DLA+ Architecture & Interior Design.

State College Area School District selected Massaro Construction Management Services LLC as construction manager for its $115 million new high school project. Crabtree Rohrbaugh & Associates is the architect.

Massaro CM Services was awarded the contract for agency construction management on the Montour School District's new $40 million, 170,000 square foot PreK-4 Elementary School project. The architect for the project is Architectural Innovations LLC.

Phipps Conservatory and Botanical Gardens selected Massaro Corporation to construct its $3.5 million exhibit and staging area. The architect for the project is Forty Eighty Architecture.

University of Pittsburgh selected Volpatt Construction as construction manager for the new $17 million John Murtha Center and addition at its Johnstown campus in Richland Township of Cambria County.

Volpatt Construction was the successful contractor on The Carnegie Library Beechview Branch renovation. The architect for the $1.7 million project is GBBN/EDGE studio.

Holy Trinity Parish selected Volpatt Construction as contractor for the renovation and expansion of its church. Lami Grubb Architects designed the project.

Nello Construction was the successful bidder on the new $7 million Public Service Building for Marshall County in Moundsville, WV. Silling & Associates is the architect for the 20,000 square foot new building.

The University of Pittsburgh awarded a contract to TEDCO Construction for the renovation of the Cathedral of Learning's fourth floor.

The General Services Administration has selected James Construction for the replacement of the Sidney L. Christie Courthouse Air Handling Unit. This project is located in Huntington, West Virginia.

James Construction was awarded a contract by Duquesne University for renovations to the former Kadet Building. This project includes façade upgrades to the building elevation on Fifth Avenue.

TEDCO Construction was selected as contractor for renovations to Verizon Wireless's building in the RIDC Thorn Hill Industrial Park in Warrendale, Marshall Township. NELSON/Nelco Architects and Brinjac Engineering designed the project.

Keystone Property Group awarded TEDCO Construction a contract for tenant improvements for Express Scripts at the Keystone Summit Corporate Park in Marshall Township. Work will start in October on the 100,000 square foot space. SNS Architects & Engineers is the architect.

The PNC Financial Services Group selected TEDCO Construction as contractor for the renovation of its Virginia Manor Shops branch bank in Mount Lebanon. The project was designed by RSH Architects.

TEDCO Construction was the successful contractor for UPMC's tenant improvements on the 22nd floor of its 600 Grant Street offices. The Design Alliance is the architect.

A. Martini & Co. was awarded a contract for the expansion of the Ligonier Valley YMCA in Ligonier Township. The architect for the $7.5 million project is Celli-Flynn Brennan Architects & Planners.

Dollar Bank awarded A. Martini & Co. the contract for tenant build-out for its Centre Heldman Plaza branch in the Hill District.

Fox Rothschild LLP selected A. Martini & Co. as contractor for its tenant build-out in BNY Mellon Center, 49th floor. Francis Cauffman Architects is the designer.

Jendoco Construction has started work on the Fellowship House for The Presbyterian Church of Sewickley, which includes renovations to an existing building at 202 Beaver Street, a new parking lot between the Fellowship house and church, new playground and new infrastructure. The architect is MacLachlan Cornelius & Filoni Architects, Inc.

Robert Morris University selected Landau Building Co. to build its new 28,000 square foot, $6.5 million School of Nursing in Moon Township. The architect for the project is Astorino.

Landau Building Company recently began construction at South Hills Honda along Washington Road in McMurray, Peters Township. The new 28,500 sq. ft., three-story building will add to its current sales, service, and parking facilities and is located behind the existing buildings on Washington Road.

Landau Building Company completed work on Allegheny College in Meadville, Pennsylvania. The project started in May 2014. This 4,000 sq. ft. project completely gutted and remodeled the second floor of Carnegie Hall, transforming the existing classrooms and office space.

PJ Dick Inc. has started construction on a new $3 million, 12,000 square foot outpatient facility for Conemaugh Health System in Meyersdale, Somerset County. IKM Inc. is the architect.

Pressley Ridge Day School retained PJ Dick to provide construction management at risk services for upgrades to an existing 59,000 square foot school facility located on the North Side. The architect is Hayes Design Group Architects.

Carnegie Mellon University awarded a contract to Rycon Construction for the Gates Hillman Center 5200 Collaborative renovation.

UPMC selected Rycon Construction to build its new $8.5 million Spine Center in Wexford. The 25,000 sq. ft. facility was designed by Renaissance 3 Architects and is expected to be complete by next summer.

At the University of Kentucky, Rycon Construction is completing a new 80,000 sq. ft. student support/ dining facility. Designed by a partnership of RossTarrant Architects & Tipton Associates, the project is valued at over $31 million. Over the summer break, in seven weeks, Rycon Special Projects Group completed multiple fast-track dining venue renovations throughout campus valued at $8 million.

At Peach Street Square in Erie, DDR Corp. selected Rycon to build Old Navy's shell space. The 15,000 sq. ft. project is scheduled for completion before December.

At Miracle Mile Shopping Center in Monroeville, Rycon's Special Projects Group is completing renovations for an 11,000 sq. ft. Mattress Warehouse.

Rycon's Special Projects Group is adding an elevator to Saint Sebastian Parish located in Pittsburgh's North Hills. The project is scheduled for completion by late October.

A renovation of an imaging suite at UPMC's South Hills location is underway by Rycon's Special Projects Group. At a cost of $1.6 million, the 5,500 sq. ft. project was designed by Image Associates and is scheduled for completion by November.

Rycon Construction is proud to announce that it was named to the 2014 Pittsburgh Business Times Pittsburgh 100 for the second year in a row. Rycon is ranked number 49 with 59 percent revenue growth from 2011 to 2013. Rycon attributes its growth to the steady return of the general construction markets. BG

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FACES & NEW PLACES

Facility Support Services announced that Brian Birch has joined its team as project engineer. As project engineer at Facility Support Services (FSS), he is responsible for project controls and ensuring that projects are constructed as planned. Birch most recently served as project manager for Cozza Enterprises. He has previously worked as project manager and junior project manager for FMS Network and Millcraft Industries, all in Pittsburgh. He obtained a Bachelors of Science in Facilities Management from LaRoche College.

Dick Building Company hired Henry Holmes III as project director.

PJ Dick Inc. is expanding into the Eastern part of the Commonwealth with the opening of an office in Exton, PA. Regional Manager Gary Heinerichs and Regional Operations Manager Wayne Schrader will lead the office. Each has 30+ years of experience in the eastern and central Pennsylvania construction market.

PJ Dick announced the following hires: Nick Cherish as project engineer in the Pittsburgh office; Mike Flynn as an estimator in the Exton office; Jeremiah Roehrig as a project engineer in State College.

Landau Building Company welcomed Jamie Maloney as Project Engineer. Maloney's responsibilities include submittals, scheduling, job meetings, correspondence, expediting materials, change orders, and purchase orders. Maloney received her B.S. in Construction Management from Brigham Young University in 2010 and immediately began her career as a project engineer before joining Landau.

Carolyn Blair has been hired as a project engineer in the Rycon Construction Building Group. She majored in Construction Management Systems at Ohio State University and has six years of industry experience. Carolyn will be stationed in Parma to assist the $45 million Shoppes at Parma project.

Rycon Building Group's newest project manager, Chris Davis, has 18 years of construction industry experience and a degree in construction management from Bowling Green State University. Chris will be part of the University of Kentucky student support/dining facility project team.

Andrew Redlinger, project engineer, will be stationed in Lexington, Kentucky, to assist the University of Kentucky student support/dining facility project. Andrew obtained a degree in mining and mineral engineering from Virginia Tech and has four years of construction industry experience.

Mike Lawson joined as a senior estimator in the Rycon Building Group. He served in the United States Marine Corps and received a master's degree in civil engineering from the University of California Berkeley and brings over 16 years of construction industry experience to the team.

Rycon Special Projects Group added Cono Passione as a project engineer. Cono attended the University of Akron and graduated with a construction engineering technology degree. He has over six years of experience in the construction industry.

Colin Reilly returned to Rycon as a project engineer with the Rycon Building Group. He has five years of construction industry experience and obtained a mathematics education master's certification from the University of Pittsburgh, a bachelor's degree in environmental and renewable resource economics from Penn State University and an associate's degree in construction management from Community College of Baltimore County.

Rycon Building Group estimating team added another LEED AP to their team. Jason Sigal, preconstruction manager, received a bachelor's degree in business management from Indiana University of Pennsylvania and has eight years of construction industry experience. Jason is actively involved in many local organizations including the Master Builders' Association Young Constructors, Youthworks, Inc., and Leadership Development Initiative.

Brenna Waterkotte has been hired to assist both the accounting team and Rycon Special Projects Group estimating team. She brings one year of office experience and four years of retail management experience to Rycon.

Rycon would like to announce Bill Keith is transitioning from his project management position in the Rycon Building Group to his new position as Director of Client Services. Bill joined the company six years ago and will be responsible for client maintenance and development.

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Also, both Al Fidazzo and Nick Grguras have transitioned from project managers to project executives.

Dan Antonucci was hired in early September as Massaro Corporation's new MEP Coordinator. Dan joined Massaro with more than 10 years of coordination experience in addition to being a CIPE/CPDC individual. Dan was most recently a senior designer with a local engineering firm in its plumbing and fire protection department. He brings with him a diverse background that will enhance the estimating and preconstruction department.

Jennifer Drover joined Massaro Corporation as a project engineer in mid-July after graduating from the University of Pittsburgh Johnstown with a degree in mechanical engineering. Jen is working on the new Holiday Inn Express on Pittsburgh's North Shore.

Jesse Newman-Evans joined Massaro Corporation as a project engineer after his recent graduation from the University of Pittsburgh.

TJ Halaprin started with Massaro Corporation in late July as a superintendent and began working with project manager Mark Hartman on the Meadville Medical Center project. TJ has been in construction since 1993 and has served in an array of industries including retail/restaurant, office, healthcare, higher education, PreK-12, warehouse and lab facilities.

Dan Farinelli joined Massaro Construction Management Services, LLC as the business development representative responsible for driving sales activities and to further develop existing customer relationships. Dan brings with him more than 10 years of business development, sales, and project management experience.

Ashely Bianco, most recently with Eckles Group and a graduate of Robert Morris University started with Massaro Design Build, LLC as a business development representative. Ashley's education and past business development experience will enhance the sales efforts for the new Design Build company, which was established earlier this year.

Brian Frye rejoined Massaro Corporation as a project manager and was quickly promoted to director of field operations.

Wheeling-based Kalkreuth Roofing & Sheet Metal announced the official opening of an office in Pittsburgh. Kalkreuth's Western PA Business Development Manager, Steve Greene, will lead the Pittsburgh office. The Pittsburgh office is the fourth satellite office for Kalkreuth Roofing & Sheet Metal, which also operates in Frederick, MD; Columbus, OH; and Lexington, KY.

Mark Rothbauer recently joined Nicholson Construction as the Regional Manager for the company's Mid-Atlantic division. In his new role, Mr. Rothbauer will oversee all business development and operations-related activities for the company's projects in Pennsylvania, Delaware, Maryland, Virginia, West Virginia and Washington, D.C. Mr. Rothbauer previously worked as a project manager for Nicholson's sister company, Menard USA. He holds a Bachelor of Science degree in Civil Engineering from Johns Hopkins University and a Master of Business Administration degree from the University of Pittsburgh.

Roger Baldwin has recently returned to Nicholson Construction as the Business Development Leader for the company's Midwest and Mid-Atlantic regions. Mr. Baldwin has more than 26 years of experience in geotechnical construction and previously spent 13 years with Nicholson between 1998 and 2011.

Schneider Downs announced that Mark A. DiPietrantonio, CPA, has been promoted to Director of Construction and Real Estate Services. DiPietrantonio joined Schneider Downs in 1995 and has extensive experience in all areas of tax planning, research and compliance. This newly-created position capitalizes on Mark's years of experience providing services to the construction and real estate industries, and focuses on the growth and development of Schneider Downs' Construction and Real Estate advisory practice.

Peter H. Schnore recently rejoined law firm Babst Calland as senior counsel in the firm's Business Services Group and will counsel the firm's clients from its Pittsburgh and State College offices. Schnore concentrates his practice in real estate-related matters. He is a member of the Institute for Professionals in Taxation and serves on the Council of the Allegheny County Bar Association's Real Property Section. Schnore is a 2001 graduate of the University of Pittsburgh School of Law. BG

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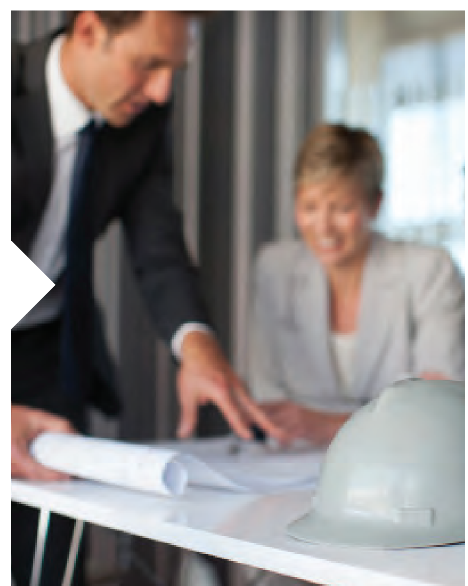

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Economic Development

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Ambridge, PA 15003
T: 724-266-4661
www.ambridgeregional.com
Gene Pash, President
GPash@ambridgeregional.com

Value Ambridge Properties at the Ambridge Regional Distribution & Manufacturing Center is located in Beaver County and is convenient to all major local roadways, and only 11 miles from the proposed ethane cracker plant. Entirely zoned for industry, its 85 acres house 22 buildings that contain over one million square feet of leasable business, warehouse, office, wet lab, distribution, and manufacturing space. Its tenants also enjoy direct access to Norfolk Southern Rail Co. service as well as on-site maintenance and logistics services. For more information, call 724-266-4661, or visit www.ambridge regional.com.

Armstrong County Industrial Development Council
Northpointe Technology Center II
187 Northpointe Boulevard
Freeport, PA 16229
T: 724-548-1500
www.armstrongidc.org
Michael P. Coonley, AICP
Executive Director
economicdevelopment@co.armstrong.pa.us

The Armstrong County Industrial Development Council (ACIDC), established in 1968 is a private 501(c)(3) industrial development corporation. Identified as the lead economic development group within the County, the ACIDC, along with its sister organization the Armstrong County Industrial Development Authority, provides single-point-of-contact service for emerging or expanding business and industry. Owners and operators of four industrial parks, single use and multi-tenant facilities, the ACIDC works closely with existing or prospective businesses to identify the right location. They also provide financing assistance to companies through government loan/grant programs and private sector financial institutions.

Community Development Corporation of Butler County
111 Woody Drive
Butler, PA 16001
T: 724-283-1961
F: 724-283-3599
www.butlercountycdc.com
Ken Raybuck, Executive Director
kraybuck@butlercountycdc.com

The Community Development Corporation of Butler County (CDC) is the lead economic development organization in Butler County. The CDC is your first contact for economic development in Butler County. The CDC works closely with you to identify the right location for your business. Available land includes 60 acres at the Victory Road Business Park, with a KOZ designation, and 30 acres at the Pullman Center Business Park Expansion. All utilities are available at both sites. Office space is also available for sale or lease at the Bantam Commons.

Fay-Penn Economic Development Council
1040 Eberly Way
Suite 200
Lemont Furnace, PA 15456
T: 724-437-7913
www.faypenn.org
Dana Kendrick
danak@faypenn.org

For more than 20 years, Fay-Penn has been the lead agency for economic development in Fayette County. As evidenced by its experience and successes, Fay-Penn has a high quality staff in place with a number of years of experience in planning, managing and marketing buildings; construction, rehabilitation, and maintenance of buildings; business park development; tenant lease development and management; state and federal grant writing, management, and administration; workforce development; low-interest business financing solutions; and real estate managing and marketing.

Washington County Chamber of Commerce
375 Southpointe Boulevard #240
Canonsburg, PA 15317
T: 724-225-3010
F: 724-228-7337
www.washcochamber.com
Mary Stollar
Senior Vice President Economic Development
marys@washcochamber.com

The Washington County Chamber of Commerce is the largest business organization in Washington County and the second largest chamber of commerce in Southwestern Pennsylvania. The Chamber focuses on economic and business development initiatives to expand the economy of Washington County and was one of the first organizations to publically support the economic benefits and job creation potential of the natural gas industry. Learn more at www.washcochamber.com.

Westmoreland County Industrial Development Corporation
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40 North Pennsylvania Avenue
Greensburg, PA 15601
T: 724-830-3061
F: 724-830-3611
www.westmorelandcountyidc.org
Jason W. Rigone
Executive Director
wcidc@wpa.net

Founded in 1983 by the Westmoreland County Board of Commissioners, the Westmoreland County Industrial Development Corporation (WCIDC) implements a comprehensive economic development strategy to promote growth in terms of job creation, economic output and a stable tax base for Westmoreland County. Through the development of a county-wide industrial park system, a responsive Business Calling Program and involvement in public/private partnerships, WCIDC strives to foster business growth, resulting in job opportunities for the citizens of Westmoreland County.

Engineer

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Mark Urbassik
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KU Resources, Inc. provides a full range of environmental management and site development engineering services to industrial, commercial, and community-based clients. The firm specializes in brownfield redevelopment, environmental site assessment, economic revitalization assistance, regulatory permitting and compliance, remediation design and implementation, and environmental risk management strategies. The firm's engineering and environmental consulting capabilities also include the areas of civil and geotechnical engineering, site development engineering, water resources engineering, mining and quarry services, water quality monitoring, and air quality compliance and permitting.

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Geotechnical Engineer

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Thomas R. Beatty, P.G.
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ACA Engineering, Inc. is an independently owned and operated geotechnical and environmental engineering, materials testing and inspection firm with offices in Pittsburgh, Mechanicsburg, and Laporte PA, and Youngstown, OH. Our engineers, geologist, draftspersons, inspectors, and technicians provide quality designs, engineering studies, surveys, and project management. Our senior staff has a combined experience of over 100 years in engineering, construction inspection, and laboratory testing. ACA maintains an in-house laboratory that has been inspected and accredited by AASHTO Materials Reference Laboratory, Cement and Concrete Reference Laboratory, and the U.S. Corps of Engineers.

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Closing Out

Manufacturing and Energy: The Pittsburgh Story

By Bill Flanagan

Bill Flanagan

Talk to many Pittsburghers about the reason our region became one of the world's great industrial centers and you're likely to hear about the three rivers. After all, the British and the French were so convinced of their strategic importance that they went to war over them in the 1750s, the French and Indian War. Rivers represented the transportation infrastructure of the day, providing access to the entire North American continent. But it wasn't just about the water; there was another element that was every bit as important, fire.

People started mining coal under Mt. Washington in 1760, just a couple of years after Pittsburgh got its name. For much of its history it was actually called Coal Hill, named for the rich "Pittsburgh Seam" that ran through it. It was the combination of fire and water (coal and the rivers) that made Pittsburgh more than a way station on the way to the West, and helped it become a center of industrial production.

The early foundries supplied settlers traveling the Ohio River to settle the continent. With seemingly endless energy resources in such close proximity to rivers and later railroads, Pittsburgh provided the resources and the technologies that made possible the modern world.

If there was a seminal year for Pittsburgh's emergence as a center of manufacturing, it just might have been 1869. That was the year that George Westinghouse started a little company in the Strip District to make air brakes for the railroad industry, considered one of the seminal inventions of the 19th century. The same year H.J. Heinz started up a food processing business in Sharpsburg and Thomas Mellon & Sons got into the banking business. And, along the way, the city fathers and mothers decided it might make sense to offer their daughters a college education, so they founded the Pennsylvania College for Women, today's Chatham University. 1869 was quite a year for a former frontier town.

Although Pittsburgh was a major center of iron and glassmaking by the time of the Civil War, it only became the Steel City in the 1870s, when Andrew Carnegie imported the Bessemer Convertor from England. The cost-effective method of producing steel that was stronger and lasted longer than iron made possible transcontinental railroads, skyscrapers and enormous bridges across the country. Name a bridge or tall, steel-framed building erected before 1990 and it's likely to be one some Pittsburgh engineer had his hands on.

Coal, and later oil and natural gas, fueled industrial expansion. Pittsburgh's enormous output in the 19th century spread across the continent and brought wealth back home. By the turn of the 20th century, the region boasted one of the highest per capita concentrations of wealth in the country, rivaling New York and Chicago. The legacy of our manufacturing heyday lives on in the global manufacturers who still call the region home and in the foundations created by Pittsburgh's native sons and daughters.

Despite the steel bust of the late '70s and early '80s, Pittsburgh remains a center of manufacturing. The sector represents about 10-percent of gross regional product and employs about 95,600 people in ever more highly-skilled jobs. As productivity has increased, so have wages for manufacturing workers in a technology-intensive environment. Manufacturing continues to be a wealth-creator that fuels prosperity across the regional economy.

So, what's ahead? Well, there's a reason they say that everything old is new again. With the discovery of rich natural gas reserves in the Marcellus Shale, more than a mile beneath the region, Pittsburgh has found itself at the center of one of the richest natural gas plays in the world. Much the way that coal under Mt. Washington made possible the first industrial revolution, the shale gas under the entire region, makes possible a new era of manufacturing in our region… cleaner, smarter, more productive. Just up the Allegheny River at Brackenridge Allegheny Technologies is firing up a billion-dollar hot strip mill billed as the fastest and most automated facility of its kind in the world. Global petrochemical companies are taking a new look at the region and its abundant supply of liquids in the shale. And innovators are adapting such technologies as 3-D printing and computer aided design and machining that will "mass-customize" instead of "mass-produce."

Our heritage positions the Pittsburgh region as well as any to lead the resurgence of manufacturing in America. Not only do we have expertise and university research capability, we have the energy resources that can fuel this future. Our biggest challenge is not our understanding of the opportunity, our technical expertise, or our capacity to innovate; it may be the willingness of our people. We need young people to see this opportunity the way their ancestors saw the promise of a New World, and we need them to get the skills required to fully realize our potential.

The future for manufacturing in our region is as bright as it has ever been, but only so long as we have a workforce that is energized about the opportunity.

Bill Flanagan is executive vice president, corporate relations for the Allegheny Conference on Community Development.

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