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ENERGY MARKET UPDATE

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On the cover: Pittsburgh International Airport Microgrid. Photo by P.J. Dick Inc.

MBA

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PUBLISHER'S NOTE

We need an energy policy in this country. That is a statement that has been true my entire adult lifetime, and probably well before that. Americans use 3.9 trillion kilowatt hours of electricity annually. That's 15 percent of the world's electricity consumed by 4.2 percent of the world's population. Energy consumption in the U.S. has grown 13 times what it was in 1950. The rate of growth of consumption has slowed dramatically over the past decade. That is obviously a good thing, but it has occurred as a result of innovation and education, not policy.

I would like to believe that education and innovation will be how we change the way we consume energy and how we produce it. That is a philosophy, however, that ignores the economic and national defense insecurity that results from our lack of a coherent energy policy. Since OPEC fomented an energy crisis in the 1970s, quadrupling the cost of gasoline during my college years, the U.S. has been buffeted by spiking prices and supply constraints intermittently. Even as innovations and conservation have restored America's energy independence, global political and national defense issues related to energy continue to pose threats to American security.

Our government has not been a hands-off observer of private sector progress during these intervening 40 years. There have been attempts at creating an energy policy, but what has resulted has been a vacillation between incentives (generally a Republican solution) and mandates (the frequent Democratic choice). A coherent national policy was difficult to craft during administrations when both political parties agreed that it was in the best interest of the U.S. In today's politics, with environmental issues – from climate change to regulation – part of tribal identification, I can't fathom an agreement from the two parties on what is in the country's best interest on any aspect of energy. Without a comprehensive energy policy, we are destined to be whipsawed between the extremes of each party when it is in power.

That's no good.

What happened in Texas this winter is a great example of what can happen without a coherent energy policy. The whipsaw that is Texas politics allowed for two strong opposing philosophies to make the residents vulnerable. Progressive politicians in Texas (and there are more than you think) pushed for alternative sources to be added to the Energy Reliability Council of Texas (ERCOT) portfolio. The streak of independence that conservative Texas politicians like to demonstrate drove a decision to be independent from the interstate grid. What could have led to one of the more resilient, diverse energy networks in the nation produced an energy grid that was not integrated to manage a crisis. ERCOT was established to ensure that Texans had reliable energy resources that did not depend on those outside its statewide membership. Perhaps the residents of Texas thought that was a comprehensive energy policy, but in February they found out it was not.

What followed was a lot of lying. Sustainable resources failed during the deep freeze but two-thirds of ERCOT's generation comes from natural gas, and the freeze disabled the gas distribution and generation systems. You can forgive the leaders of the state from not anticipating that their weather would be colder than Alaska's for more than a week, but it's harder to comprehend why the option of the interstate grid was eliminated.

Energy is infrastructure in the 21st Century. Too much of our individual and collective lives require electricity to allow reliable energy to become a "state's rights" issue. Our energy grid is a mess. In part that's because our need for power has grown beyond what the grid's architects could envision; however, part of the problem is that energy is another one of those imperfect marriages of capitalism and collectivism. Without the risk-taking capitalists - going all the way back to Edison, Tesla, and Westinghouse – the U.S. would not have had the wherewithal to become the world's industrial powerhouse. In 2021, however, access to electricity can be a matter of homeland security. One only needs to look at what happened when capitalism kicked in during the Texas freeze, when the price of a megawatt went from \$50 to \$9,000 during the shortage, to acknowledge that an element of public good exists in our electricity supply.

It's probably a fool's errand to ask our politicians to look at our nation's resources and needs to craft a policy that gets us from 2021 to 2050 with reliable energy that has less impact on the environment as time passes. Our energy system is like our road system. A cooperative approach to it ensures that there is the bandwidth for the innovator and the average citizen to have the resources to do what they want.

America possesses an abundance of options for generating and distributing electricity. We are in transition from fossil fuels to renewable generating sources, but we are not to the point where those sources can replace fossil fuels. At some point, probably in the next 20 years, private innovation will sort out which renewable sources of power work best for our demand and our environment. Getting there without an overarching plan, a national energy policy, will mean that access to power will be uneven and vulnerable to disasters – natural or otherwise. Electricity is too vital to our nation, and we are too interconnected by electrical demand, to allow there to be "haves" and "have nots" when it comes to power.



Jeff Burd

Pittsburgh Works Together advocates for an all-inclusive economic future that recognizes the vital role of both traditional and emerging industries.

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REGIONAL MARKET UPDATE

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The most recent look at the regional employment situation shows how the regional economy has bounced back and how far it still needs to go. The June 1 Pittsburgh Region Employment Update, released by the Pennsylvania Economy League of Greater Pittsburgh, reported that employers added 141,800 jobs in April 2021 compared to April 2020. That 14.6 percent gain outpaced the U.S. economy overall; however, job creation in Pittsburgh has lagged the rest of the country since the beginning of the year. Pittsburgh's unemployment rate of 6.8 percent remained .7 points – or 11.5 percent – higher than the national unemployment rate, although it was significantly lower than Pennsylvania's overall 7.4 percent rate.

Based upon the Local Area Unemployment Statistics data, roughly half of those who were employed in April 2020, and unemployed in April 2021, left the workforce in the interim. It is unlikely that there will be certainty about whether the smaller workforce participation is due to a wave of retirements or temporary exits until September, when students are expected to return fully to school and extended unemployment benefits have expired.

Another report by the Economy League offered some insight into the impact of the pandemic on the regional workforce. The Regional Consumer Confidence Trend Analysis for June included data on unemployment trends. June's report found that 14 percent of respondents said they were not working and not looking for a job. Among those not looking, 29 percent said that the lack of childcare was the reason. That suggests that the situation won't improve dramatically until school returns. The interesting response from that group was the 16 percent who said they were taking time off to reassess their careers. That is in line with national trends. Applied to the local pre-pandemic workforce, that data suggests more than 25,000 people who will be actively looking to start a new career when they return to job seeking. If it's an accurate view into the mindset of all employees, such a reallocation of workers will add more uncertainty to hiring in the latter half of 2021 and 2022.

Pittsburgh's job gains in April represented a big reversal from the year before, when the full impact of COVID-19 mitigation factors was felt. Because Pennsylvania enacted some of the strictest mitigation measures in the U.S., the year-over-year gains in Pittsburgh outpaced all its benchmark cities' gains in April, with the exception of Detroit. Comparing the levels of employment in April 2021 to April 2019, however, Pittsburgh ranked third from the worst. Through April, employment was at 93.1 percent of the April 2019 level in Pittsburgh. That compares to 95.3 percent nationwide. Construction stood out

among the major industry sectors in Pittsburgh as exceeding the April 2019 level of employment at 101.1 percent, with transportation and warehousing the only other sector above the 2019 level.

Business owners in the tri-state area are expecting the remainder of 2021 to bring improved sales and profits, higher prices, and higher wages, according to the Federal Reserve Bank's Beige Book. The bi-monthly survey of economic conditions covering the April-to-June period found that 69 percent of business owners in Western PA, West Virginia, and Ohio were seeing better conditions. That was the highest Business Condition Index reading in Beige Book history. More striking may have been the fact that only three percent of owners saw conditions worsening.

Survey respondents overwhelmingly felt input inflation during the April-to-June period. In the Fed Cleveland Branch footprint (which includes Pittsburgh), 71 percent said they were experiencing high non-labor costs. More than half – 56 percent – said they planned to raise wages during the second quarter to attract workers. That could help accelerate the return to the workforce, especially for lower wage earners.

Construction is returning to pre-pandemic levels haltingly, even as the spread of COVID-19 has been halted by widespread vaccination. Consumers in the region have mostly embraced the relaxed restrictions on gathering, which should be a boon for the hard-hit hospitality industries. The hospitality workforce has been slowest to return to work, however, leaving many restaurants – including the dozens of new establishments that have opened this year – unable to serve at full capacity. Business at the casinos has improved significantly and hotel capacity has slowly climbed to near 50 percent.

Activity is higher than before the pandemic in several key sectors. The much-publicized housing industry boom over the past two years has been an incentive for new subdivision development, which has pushed new construction ahead by nearly 20 percent year-over-year. Multi-family development is up significantly also, as projects deferred in 2020 move ahead and the shortage of single-family homes keeps potential buyers renting for another year.

Industrial projects have also continued an upward trend that predates the pandemic. The acceleration of online shopping – both for consumers and businesses – is a catalyst for the development of more warehousing and last-mile fulfillment centers that had previously been limited in Western PA. Consequences of the pandemic have accelerated the

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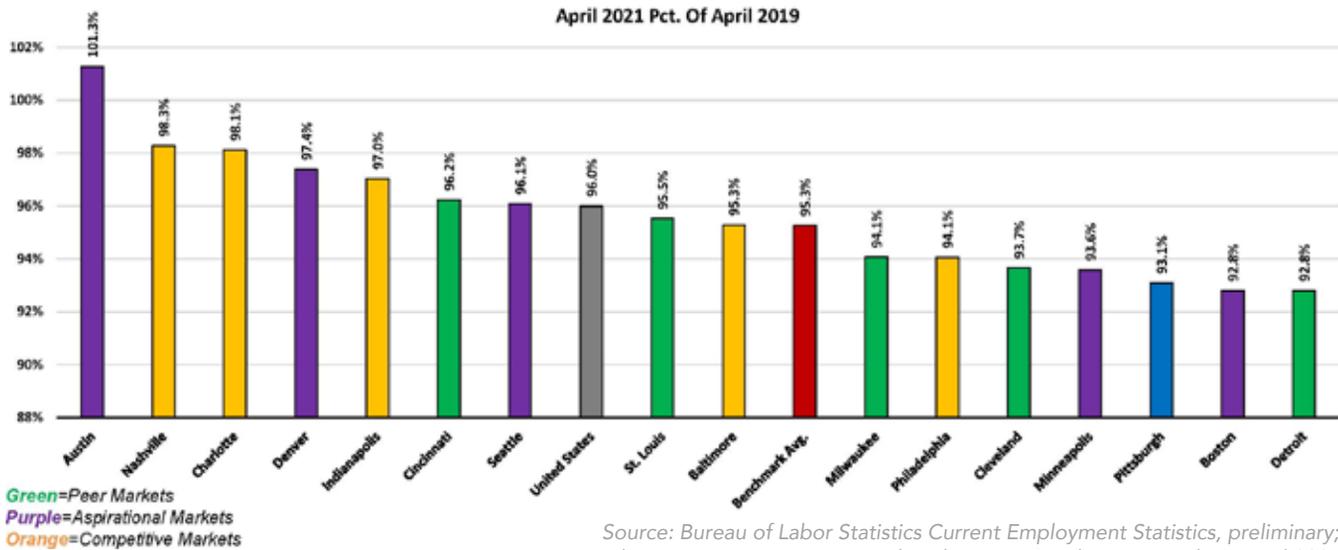
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Source: Bureau of Labor Statistics Current Employment Statistics, preliminary; Pennsylvania Economy League, Pittsburgh Region Employment Update, April 2021

demand from industrial users in healthcare, manufacturing, and cold storage. Although demand from the latter category has not increased significantly in Western PA, demand for warehousing of medical supplies and personal protection equipment – which were scarce at the start of the outbreak – has driven leasing and new construction. Likewise, the ongoing supply chain disruption has convinced manufacturers that maintaining inventories of materials and subcomponents on site or near manufacturing is a hedge against a future global disruption. That strategy may prove more durable than “re-shoring.”

As an indication of the demand for industrial space beyond Amazon, there are currently three major projects underway or in site selection process that have nothing to do with e-commerce. One, the so-called “Project Chief” involves a multi-state search for a 500,000 square foot pet food facility. Another, known as “Project Ladybug” involves construction of a million-square foot food growing facility.

Higher education projects are moving forward at a pace that was considered unsustainable six months ago. Uncertainty about enrollment levels and the financial impacts of COVID-19 pushed almost all college and university projects to the back burner in 2020. With few exceptions, major capital spending on facilities was expected to remain on ice until 2022, but the successful completion of on-campus life through spring semester – combined with widespread vaccination – thawed projects at Pitt, Carnegie Mellon, and Duquesne University since the new year.

There are still significant obstacles to a full-blown higher education building boom in 2021 – hyperinflation of building materials primary among them – but the list of projects moving forward in Oakland and the Bluff is growing. Duquesne selected Rycon Construction as construction manager for its \$53 million College of Osteopathic Medicine, which will start in early 2022. The Turner/Mosites team took bids on Pitt’s \$95 million central plant at its Victory Heights section of campus. Planning and design are also moving

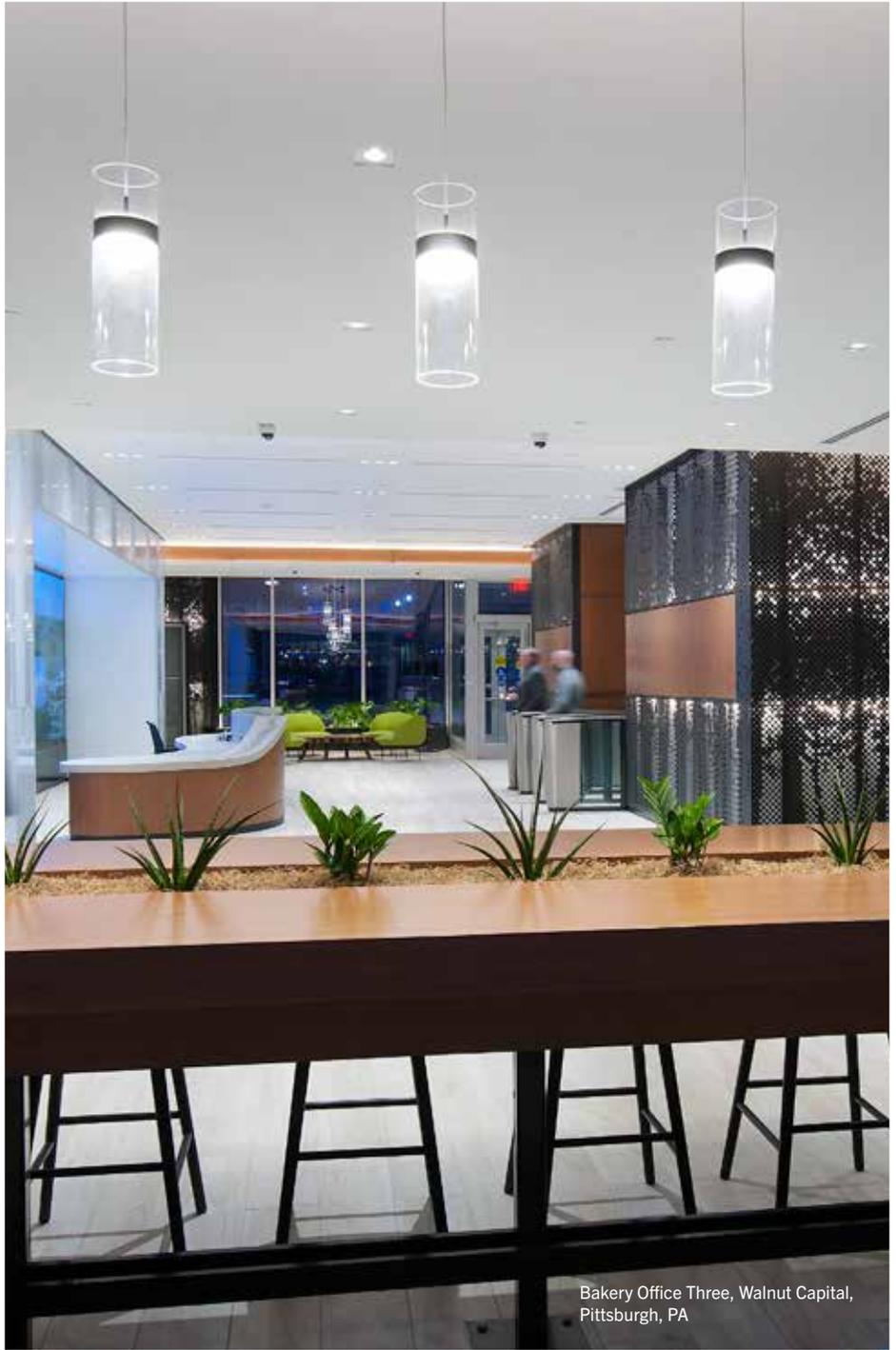
forward on Pitt’s \$160 million student recreation center and \$140 million Hillside Residence Hall, which will be built by the Mascaro/Barton Malow team, and the \$110 million Human Performance Center that will be managed by Massaro/Gilbane. Mosites Construction has begun work on the \$45 million Forbes Beeler Residence Hall at Carnegie Mellon and Mascaro Construction is expected to begin work on Carnegie Mellon’s \$105 million Wellness Center in the third quarter of 2021. CMU also announced the receipt of \$150 million in grants from the Mellon Foundation in May that will help fund the construction of a new \$210 million science building and a \$150 million robotics innovation center at Hazelwood Green before 2024.

Pittsburgh’s healthcare sector managed the worst stages of the COVID-19 outbreak well and had revenues-over-expenses growth that is fueling increased investment in facilities. Both Allegheny Health Network and UPMC are on track to have capital spending of \$300 million in 2021 that will be dispersed throughout the regional hospital facilities. UPMC’s new \$900 million Heart and Transplant Hospital at Presbyterian is back on track for construction to start in 2022, with design assist packages for major trades going out later in 2021.

Two major categories hit hard by the pandemic – offices and public education – will not see an increase in construction in the foreseeable future. While a few spec office projects in hot locations will move forward in 2021, the uncertainty about occupancy levels will keep construction low through 2022. Although there are signs that office occupants will return from home in greater numbers than originally forecasted, the existing vacancy rate – particularly in downtown Pittsburgh – will keep rent growth in check and suppress new construction through 2022. The demand for tenant improvements is likely to be higher, however, as tenants take advantage of a renters market to move or get improvement concessions to remain in place.

Public school systems were among the most-disrupted institutions since March 2020. Measures taken to prevent

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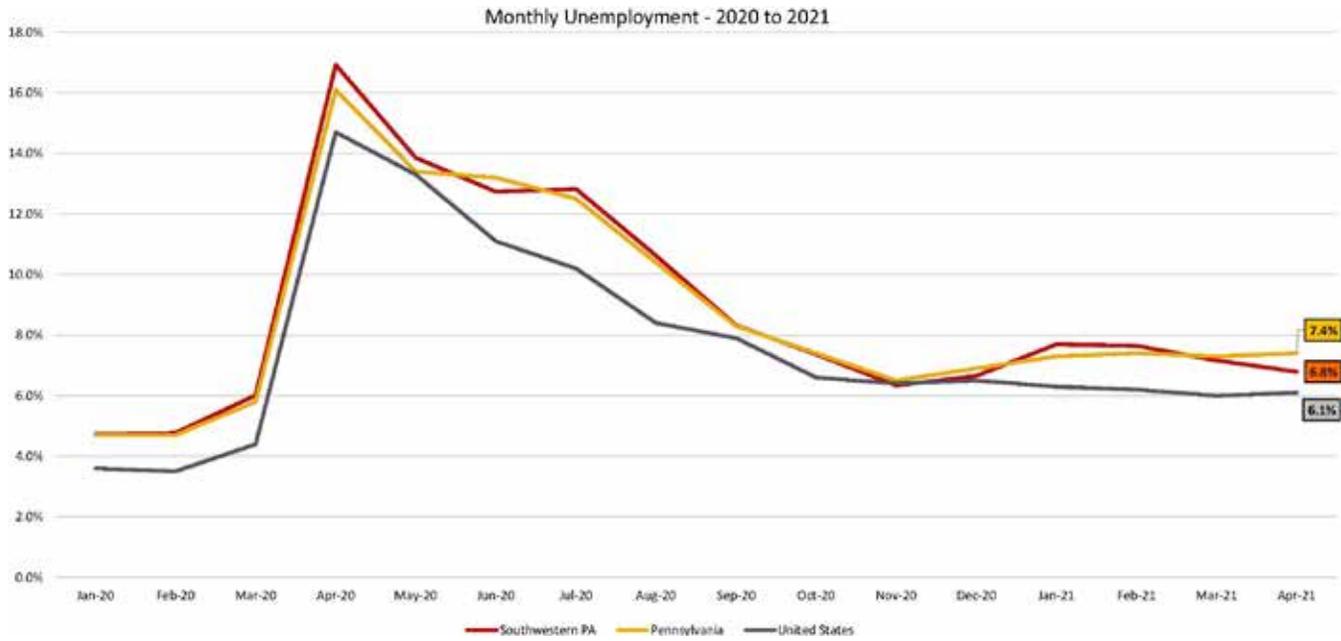


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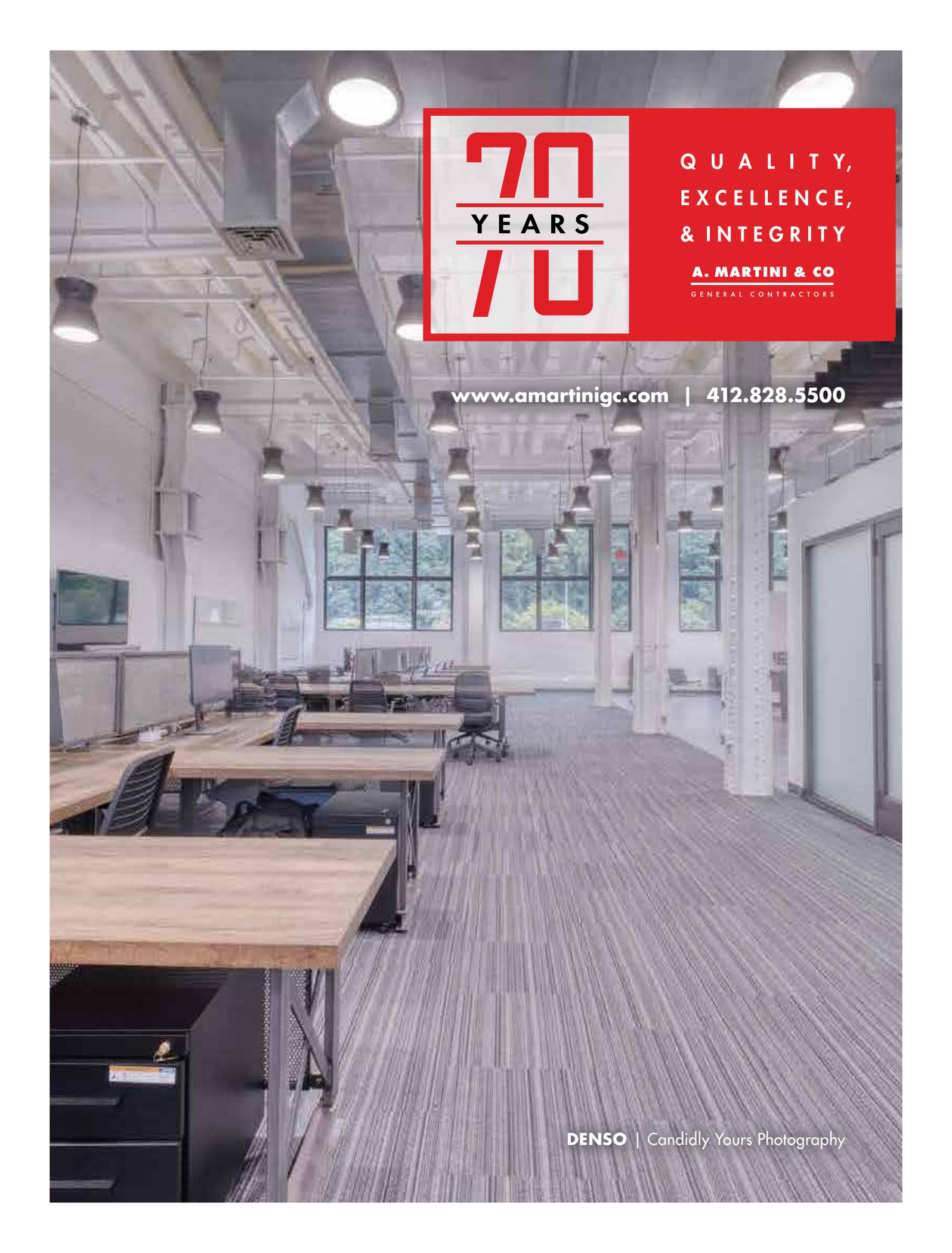
Source: Bureau of Labor Statistics Local Area Employment Statistics, PA Department of Labor and Industry, Pennsylvania Economy League, Pittsburgh Region Employment Update, April 2021

the spread of COVID-19 added unexpected costs to K-12 budgets that were already stretched thin. School districts were unable to downsize in the way businesses did, although the cancellation of extracurricular activities provided some savings. With the prospect of something like a normal return to school in fall 2021, public school districts will face the challenge of having roughly half of its students unvaccinated, meaning that some measure of infection control will remain until the risk of virus spread is gone. Higher property values have helped bump public school revenues higher but an infusion of state or federal funding will be required to improve the public education construction market.

Data on construction activity through the first five months finds higher-than-expected volume for both residential and nonresidential projects. With little chance to build backlog in the second half of 2020, nonresidential/commercial construction was forecast to be sluggish, at least until the latter half of the year. Through May 31, however, \$2.3 billion in construction had started (including the construction put in place at the Shell Franklin plant).

New residential construction has been aided by strong demand and limited inventory of existing homes for sale, although the supply of new construction lots is also limited. Through May, permits were issued for 2,268 single family homes, compared to 1,648 during the first five months of 2020, an increase of 37.6 percent. Even allowing for the forced halt in activity in April 2020, construction of new homes has jumped significantly higher. Apartment construction is also up dramatically, with 892 units underway versus 567 units in the same period of 2020.

Spiking lumber prices did not slow housing starts in April and May, as happened at the national level. With the price of lumber falling 40 percent since May began, the outlook for new home construction is brighter than any year since 2005. Higher construction prices continue to cause problems for nonresidential/commercial budgets, forcing delays in starting work. If, as expected, construction material pricing pulls back as the supply chain regains full capacity in the latter months of 2021, the outlook may be for higher-than-expected construction volume during this transition year between the pandemic and the boom beginning in 2022. **EG**



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NATIONAL MARKET UPDATE

It took less than three months of accelerated vaccinations to elevate the supply chain disruptions from potentially problematic to problematic. As the spring ended, shortages of key materials and inputs were causing a slowdown in many industries, some of which were driving economic recovery. Against the backdrop of the highest growth in gross domestic product (GDP) in 70 years, it has become clear that demand could be fueling even higher growth if supply were not constrained.

None of the supply chain disruptions are particularly surprising. In certain sectors – residential construction and steel manufacturing, for example – the imbalance between the supply and demand have been pushing prices higher and lead times longer since before the approvals of vaccines in late 2020. For other sectors, like automotive, overlooked disruptions in small but critical components – semiconductors for the automotive industry – have shut down expansion as sales were growing. In the service industries, pent-up demand is running headlong into a shortage of skilled workers. The net effect of this global supply problem is that some major sectors of the economy will experience a delayed recovery. On the plus side, businesses are responding to supply bottlenecks by boosting investment in equipment and intellectual property.

The supply problem is most obvious in the manufacturing sector. The Institute for Supply Management manufacturing index jumped half a point in May to 61.2, after slowing to 60.7 in April. Within the sub-component indexes, however, the production index reflected the supplier disruption, falling four points from April and nearly 10 points from March. New orders increased, pushing the backlog index to 70.6 percent.

Backlogs have hit all-time highs for three consecutive months.

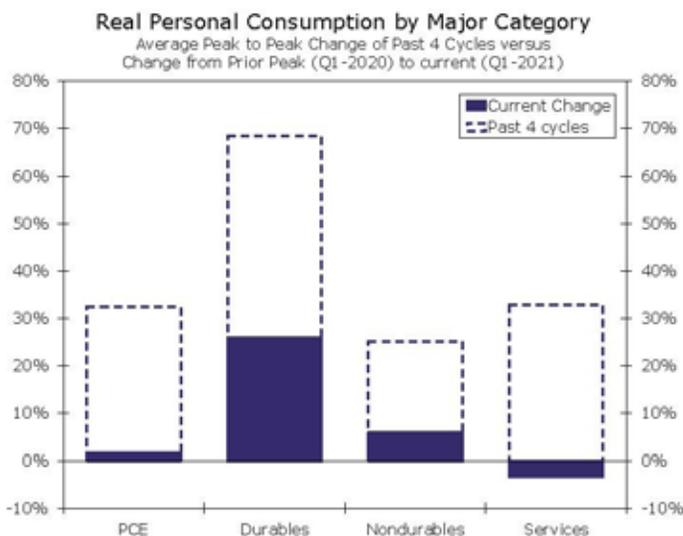
Depending on how quickly the supply chain can recover, the late winter/early spring decline in manufacturing may prove to be a short-lived bump in the road. If semiconductors, for example, can recover to meet demand in the third quarter, auto manufacturing can escalate. Summer shutdowns can be deferred to increase production, which will also boost the disposable incomes of workers in an industry that makes up 7.5 percent of all industrial output. Even if supply can escalate, however, rapid increase in workforce participation will be needed to beat the clock in 2021. The more likely scenario is that some significant share of recovery-driven demand for services and goods will be pushed into 2022.

That scenario is not all bad for a forward-looking industry like construction. Project owners will have a longer runway to when full occupancy is required for offices, hospitality, and retail properties. Pent-up demand for construction will drive volume further into 2022 than if supply capacity utilization was much lower today. The other side of that forecast is that construction volume in 2021 will be lower than it might otherwise be.

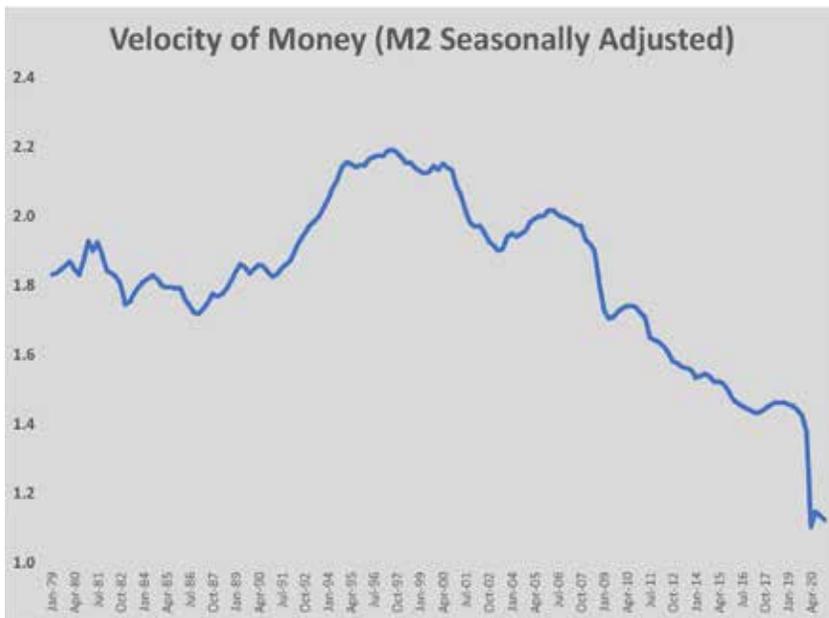
Residential construction is already seeing the impact on volume. The May 18 report on housing construction saw a 9.5 percent decline in starts in April as builders felt the impact of record price increases in lumber and shortages of many materials and equipment. Single-family home starts fell by 13.4 percent, with permits for new single-family homes off 3.8 percent to 1.15 million units. The June 17 report on May's starts revised the April starts lower by 52,000 units and showed a smaller-than-expected increase in May of 3.6 percent to 1.572 million units.

Some of the pullback in construction volume will doubtless be caused by the inflation in prices for many construction materials. The heightened inflation is another product of the disrupted supply chain, which is inadequate to meet the burst of new demand that followed the rapid re-opening of the economy in spring. The headline increases in consumer and producer prices were exaggerated by the comparison to spring of 2020, when economic demand was suppressed by COVID-19 mitigation; however, the increases in basic materials like steel, lumber, copper, asphalt, and fuel have been significant in comparison to January 2020 also.

The outlook for inflation is calmer once the imbalances in supply and demand are remedied throughout the rest of 2021. Manufacturing capacity for steel and refining capacity for fuel, for example, remain much higher than global demand (although timbering capacity appears to be in a secular decline). Concerns about heightened money supply adding to inflation overlook the long-term trend in the velocity of money supply, which has been



Source: U.S. Department of Commerce and Wells Fargo Securities



Velocity of money – the frequency a dollar is used to purchase goods or services – has declined steeply as the supply of money has increased. Source: Federal Reserve Bank of St. Louis.

declining for 25 years. Put simply, the supply of money isn't inflationary if it isn't changing hands more rapidly.

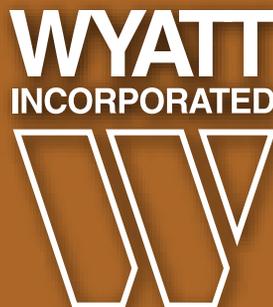
There is strong evidence that the increase in money put directly in consumers' hands has given a jolt to the economy.

During the first quarter, for example, personal consumption grew by seven percent on an annual basis. That increase was more than the overall growth in GDP for the quarter. The strong increase in personal consumption during the first quarter bodes well for the recovery and expansion during the next few years. Compared to the peak-to-peak spending during the past four economic cycles, consumption during the first quarter of 2021 represents only a fraction of the potential. Spending on durable goods from January through March was about 30 percent of the average of the peak-to-peak durable goods consumption of the past four cycles. Personal consumption, non-durable goods consumption, and spending on services were all below 10 percent of the previous cycles' totals, with services still negative through the first quarter. The comparison suggests that spending will continue to accelerate, particularly for services, throughout the rest of 2021 and 2022.

An acceleration of demand for services, assuming that it does not lead to a retracing of the progress in suppressing the

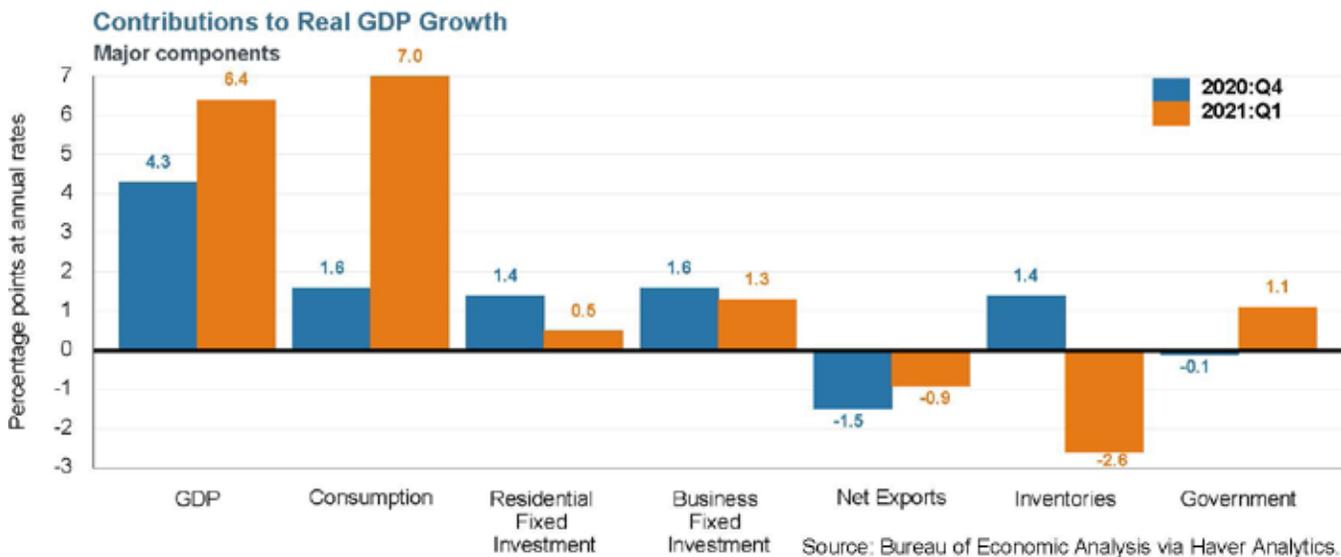
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spread of COVID-19, will be good news for hiring in a number of the industries that are lagging. The rebuilding of the supply chain, particularly in the durable goods category, will boost manufacturing. To return to pre-pandemic levels of employment, and to draw those who left the workforce back, there will need to be a recovery in service sector employment. Activity in the early summer should be supportive of that recovery, especially as pent-up demand for hospitality and recreation is unleashed.

A summer void of major virus surges would boost the service sector and push unemployment below five percent by 2022.

One drag on GDP, inventories, is expected to turn positive during the balance of 2021. As expected, uncertainty about the economy made manufacturers unwilling to make commitments to re-stock inventories for more than immediate needs for most of the year following March 2020.



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Producers fared poorly at forecasting the turnaround, leading to supply issues that will limit the contributions of residential and business investment in structures during 2021. Unfilled orders for capital goods grew during the first quarter to almost 10 percent. The growing backlog should boost equipment spending starting in the second quarter and inventory re-stocking should take until early 2022 to peak. Those will be slight drags on GDP in 2021.

Even with the drag from the supply chain, the forecasts for GDP growth in the U.S. continue to move higher. The Blue Chip Economic Indicators, a monthly survey of leading economists by Havers Analytics, recently upped its forecast of second quarter growth to 9.2 percent, roughly half again as much as the first quarter growth. The consensus forecast of total GDP for the second quarter was \$19.5 trillion, which would be above the output from first quarter of 2020 and above the long-term trend line.

Such elevated economic activity suggests that hiring should be occurring at a pace that would result in a million new jobs monthly; however, the reality has been less robust. Following April's surprising slowdown in job creation, new hiring in May increased, but hardly at the rate the economic growth would suggest. May's hiring saw 559,000 jobs added, bringing unemployment down to 5.8 percent. Based upon several indicators, however, employers have a significantly higher number of openings than there are job seekers. May's Employment Situation Summary, in fact, found that workforce participation increased only slightly to 61.6 percent. That is almost two points lower than February 2020.

Several million workers remain out of the workforce, likely the source of the restrained hiring numbers. Claims for unemployment have been falling steadily throughout the spring, dropping below 400,000 by mid-June. With layoffs receding, hiring has been slowed not by employer demand but labor supply. While evidence doesn't support the theory that the supplemental unemployment benefits is keeping workers on the sidelines, there is data that the lowest wage earners are not seeking employment while the extended benefits are in place. Moreover, the disproportionate number of women who have left the workforce suggests that lack of childcare – both closed day care centers and remote schooling – has forced mothers to stay home but not work. The vastly improved public health situation should help with both of these factors in September, as schools are expected to reopen normally, and enhanced unemployment is unlikely to be extended again.

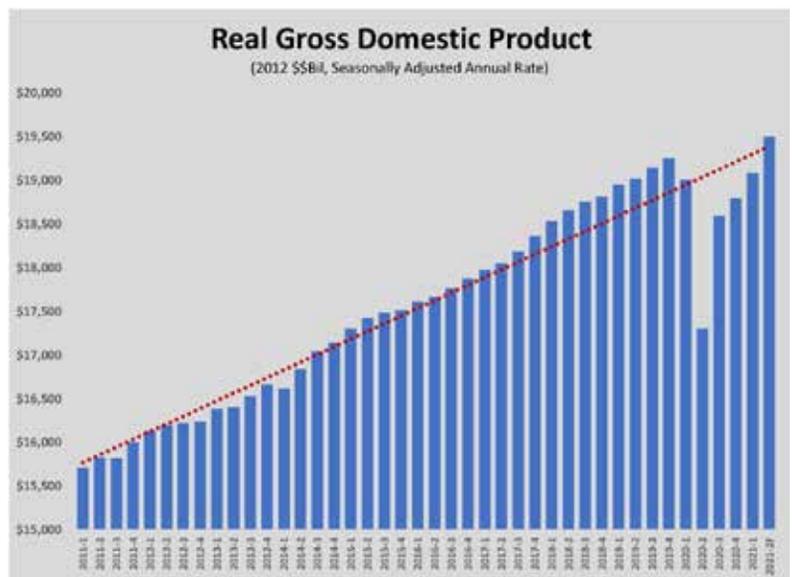
Assuming that workforce participation recovers close to the 63.3 percent level of February 2020 by the end of the third quarter of 2021, job creation should maintain a pace at or above 500,000 monthly into the first quarter of 2022. That would be an organic boost to demand for goods and services that will drive construction.

Construction spending remains solidly in

the \$1.5 trillion range, even with a cooling of residential investment. Recovery of office-occupying jobs is not expected to move the needle on construction of facilities in 2021 and the impact of higher prices has slowed the recovery of spending on institutional and public construction.

The strongest growth category for the balance of 2021 should be commercial construction. Setting aside the uncertainty about the future of office occupancy, there are categories of commercial construction – industrial and multi-family – that will continue to receive a boost from the habits acquired during the pandemic; and categories that were severely impacted by the pandemic – hospitality and retail – should see increased construction as renewed interest in travel and entertainment spurs a recovery in occupancy and rents. Underlying the recovery in commercial real estate is an abundance of capital reserves and an interest rate environment that supports borrowing.

Recovering from the economic shock that followed the COVID-19 outbreak will follow a different trajectory than recovering from a recession caused by imbalances. While most economists and business owners expected a recession by 2021, the pandemic overwhelmed the long-term secular factors that were trending towards recession in 2020. The factors fueling recovery – high levels of consumer savings, record high reserves of business capital, strong stock markets globally, cheap capital cost, and booming demand for goods and services – are aligned to kick start the economy. Hurdles do exist, however. The likely trajectory for recovery will not be a straight line, but rather one with ups and downs as imbalances in supply and demand are worked out over the next six months. Vaccination levels must continue to climb, allowing infections to continue falling even as restrictions are eased. Accomplishing that will require solving the shortage of vaccines in Asia and Africa. Bringing the coronavirus under control throughout the globe will allow the economic forces to bring recovery to all markets. **BG**



Forecasts for the second quarter of 2021 bring GDP above the previous 2020 highs and the long-term trendline for GDP. Source: Blue Chip Economic Indicators, Bureau of Economic Analysis.



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WHAT'S IT COST?

Much uncertainty remains about the outlook for construction pricing for the balance of 2021. As the economic recovery gains pace, however, it is certain that inflation for basic materials will be higher, and materials will be in shorter supply than prior to the pandemic. Experts in most of the industries experiencing volatile pricing expect things to normalize by the fourth quarter of 2021 but normalization of pricing will depend upon the normalization of the supply chain.

The outbreak of COVID-19 resulted immediately in a spike in inventories, as consumption stopped in March and April 2020. In the months following the strictest mitigation measures, manufacturers and distributors allowed inventories to burn off, creating the largest decline in inventory-to-sales ratios since the government began tracking that data in January 1992. The March 2021 ratio of 1.23:1 is the lowest recorded. Forecasting of demand has severely lagged the reality of the recovery thus far, leaving an extraordinary imbalance between supply and demand.

Evidence of supply chain disruptions has increased, even as manufacturers have ramped up production. The Census Bureau Small Business Pulse Survey found 43.4 percent of small businesses experienced a delay of some sort due to supply disruption at the start of June. The bad news is that 65.2 percent of construction businesses experienced a disruption. The worse news is that 81.2 percent of PA construction businesses experienced a disruption. The good news is that the resultant higher prices have been a strong incentive to manufacturers to rebuild inventories.

Compounding the price hikes that have been driven by supply/demand imbalances is a tight labor supply. In the face of growing employment demand, reluctance to return to work has constrained job growth. Even with unemployment at nearly six percent, wage growth is at three percent. In May, wages for non-supervisory workers were \$1,300 higher year-over-year.

Producer price index for nonresidential building construction was 2.8 percent higher year-over-year in May 2021, a reflection of downward competitive pressures on profits rather than material inflation. Year-over-year inflation of all inputs to construction rose steeply by 24.3 percent. Materials that showed unusual inflation were again industrial metals (and their derivatives), #2 diesel fuel (and its derivatives), plastics, gypsum products, and lumber. The price of lumber has fallen significantly from its May 7 high of \$1,710 per thousand board

feet, although that is small consolation for those expecting to buy at sub-\$500 prices that persisted through January 2021.

Taking the factors causing inflation into consideration, economists expect higher prices will be temporary but will persist through 2021, or until supply chain problems ease. Core inflation is forecasted for 3.2 percent to 4 percent in 2021, with construction inflation running slightly higher. Year-over-year comparisons through the summer 2021 will be exaggerated by declines during the early phases of COVID-19 in 2020. With the Federal Reserve Bank seemingly committed to near zero rates through 2022, inflation will turn upon the speed with which manufacturers and suppliers add capacity and inventory. With higher prices as an incentive to expand capacity, expect calmer inflation before winter 2021-2022. **BG**

PERCENTAGE CHANGES IN COSTS Consumer, Producer & Construction Prices	May 2021 compared to		
	1 mo.	3 mo.	1 yr.
Consumer price index (CPI-U)	0.8	2.4	5.0
Producer price index (PPI) for final demand	0.9	2.7	6.6
PPI for final demand construction	0.6	2.1	2.8
PPI for new nonresidential buildings	0.5	2.3	2.8
Costs by Construction Types/Subcontractors			
New warehouse construction	0.9	3.2	3.2
New school construction	0.1	1.0	1.3
New office construction	1.0	3.0	4.4
New industrial building construction	0.1	0.9	1.7
New health care building construction	0.7	3.5	3.1
Concrete contractors, nonresidential	1.0	2.0	3.0
Roofing contractors, nonresidential	0.4	2.2	4.0
Electrical contractors, nonresidential	1.0	0.8	1.7
Plumbing contractors, nonresidential	0.6	1.5	2.3
Construction wages and benefits	N/A	0.7	2.7
Architectural services	0.0	0.3	0.7
Costs for Specific Construction Inputs			
#2 diesel fuel	15.6	22.8	199.2
Asphalt paving mixtures and blocks	1.3	(7.2)	1.9
Cement	0.0	0.9	2.9
Concrete products	0.5	2.3	3.1
Brick and structural clay tile	1.8	2.5	5.7
Plastic construction products	2.8	9.7	17.5
Flat glass	0.2	2.0	4.0
Gypsum products	2.1	7.6	14.2
Lumber and plywood	16.0	33.4	111.0
Architectural coatings	0.4	4.4	4.8
Steel mill products	2.4	42.6	75.6
Copper and brass mill shapes	8.0	17.5	60.4
Aluminum mill shapes	2.7	12.7	28.6
Fabricated structural metal	13.0	17.8	22.6
Iron and steel scrap	5.0	13.6	76.6

Source: Bureau of Labor Statistics, Updated June 15, 2021
Compiled by Ken Simonson, AGC Chief Economist

ENERGY

MARKET UPDATE



Photo courtesy Tenaska Energy

IT HAS BEEN AN EVENTFUL DECADE OR SO FOR THOSE IN THE ENERGY INDUSTRIES. THE ENERGY MARKET IS HOME TO SEVERAL MAJOR INDUSTRIES THAT ARE AIMED AT ONE GIGANTIC TASK: PROVIDING SUFFICIENT POWER TO MEET THE GROWING GLOBAL DEMAND. PARTICIPANTS IN THOSE INDUSTRIES – OIL, GAS, COAL, NUCLEAR, AND RENEWABLES – HAVE LEARNED HOW VOLATILE MARKET CONDITIONS ARE. LIKE WITH MOST INDUSTRIES IN THE 21ST CENTURY, THAT VOLATILITY HAS INCREASED.



Although oil was discovered in Western PA and coal has been mined throughout the region for almost two hundred years, the Pittsburgh region was buffeted less by the volatility of energy markets than its neighbors in West Virginia or in the oil fields of the Southwest. That changed about 15 years ago.

Since the middle of the 2000s, Western PA has seen booms and busts in nuclear energy, oil, and natural gas drive the creation of tens of thousands of jobs, billions in infrastructure, and the construction of millions of square feet of buildings; and, it has seen how declining fortunes can empty buildings and spark layoffs.

What follows a decline in the fortunes of energy companies is a shakeout of the winners and losers. Those that had dry powder will buy the assets of those that were overextended at the wrong time or that had overvalued assets. The survivors adjust to making profits at lower costs and the cycle regenerates. Pittsburgh is now a region that will experience that cycle of rebalancing supply and demand.

There are more complications facing the energy industries than imbalanced supply and demand. The planet's climate has changed and leaders are looking at sectors – like the energy markets – that are believed to be contributing to the potential environmental disaster. Society is seeking to move away from fossil fuels, transitioning over the next couple of decades to a carbon-free energy environment. Fossil fuel companies have responded to this sea change.

What lies ahead in the 2020s seems to be consolidation and realignment of the companies in the energy markets. The world's largest oil companies have been reallocating their assets and re-branding themselves as energy companies, buying solar and wind companies and shifting to carbon neutrality strategies. Energy generation itself is going through a realignment too. Power generation is being created on smaller scale to add resiliency (and reduce

reliance on the grid). Distributed energy resources (DER) bring solar and wind to the individual residential level but DER, like combined heat and power plants (CHP) or micro-grids, allow for district-level energy projects that power neighborhoods or major institutions.

After two decades of energy innovation meant to move the world to a new reliable, sustainable, widely available, and cheap source of power, it is clear there are no silver bullets. Moreover, the increasing pace of technological advance is revealing that many of the assumptions drawn about reaching a greener world are incorrect. There will be multiple solutions to this seemingly insurmountable problem. And there will be many opportunities for construction.

Since the 1950s, energy has provided many construction jobs. Power plant construction throughout the region created thousands of jobs with each project, but also created hundreds of jobs for routine maintenance and repair each year. Now, with those plants closing, new construction opportunities are coming from the increase in the smaller, district-level projects that should develop with increasing frequency. The Marcellus shale boom powered significant construction growth in the 2010s. The next wave of opportunities is coming from the build-out of hundreds of local power projects that will add resiliency, if not redundancy, to the existing power grid, even as the U.S. works towards an energy market that is 100 percent renewable.

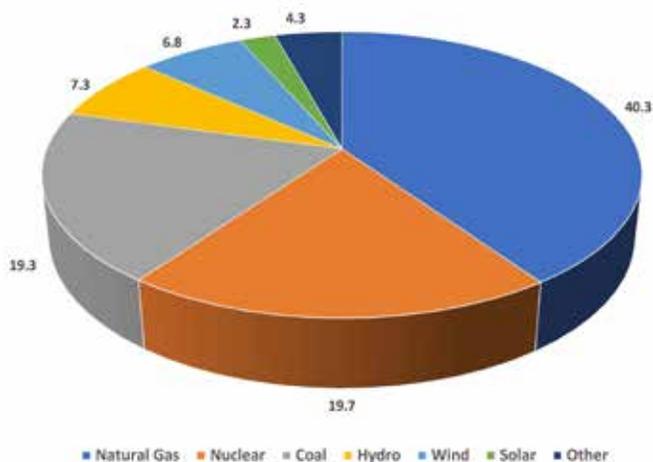
The Grids

One of the misleading references made when communicating about the way power is generated and distributed (including in this article) is the reference to “the grid.” Our systems of getting electricity from power plants to customers are comprised of two major transmission grids, the high-voltage power lines that carry electricity over longer distances, and low-voltage distribution grids, that carry electricity to local consumers. The latter are what are buried underground or strung from poles along the side of the street. The transmission grid is the interstate highway system of electricity, distribution grids are the state and local roads.

These two systems make up what we commonly refer to as the grid. In the case of Western PA, that's the regional interconnected grid, managed by PJM, which serves 13 Mid-Atlantic and Midwestern states and the District of Columbia.

The high-voltage power grid is the destination for centralized energy generation, the utility-scale power generators or storage that are connected directly to the interstate system. This includes utility power plants, wind farms, battery stacks, and solar farms. Distributed energy consists of anything that generates, stores, or manages electricity on the distribution grids. That runs the gamut from rooftop solar panels, individual wind turbines, consumer batteries, vehicles, or building energy management software. Micro grids fit into this category.

Share of Generating Capacity in 2020



Source: Energy Information Administration

Energy that is not distributed, meaning individual or community generation or storage that does not tie into either transmission system, is “off the grid.” It is common for discussions of micro grids – especially those using renewable sources – to refer to the power generated in those micro grids as allowing the facility served to be off the grid. But micro grids (including the one at the Pittsburgh International Airport described on page 31) are usually plugged into the interconnected power transmission systems. They just do not draw from the interstate grid when operating. In fact, one of the allures of developing a micro grid is that any excess power can be sold back to the interstate grid operator.

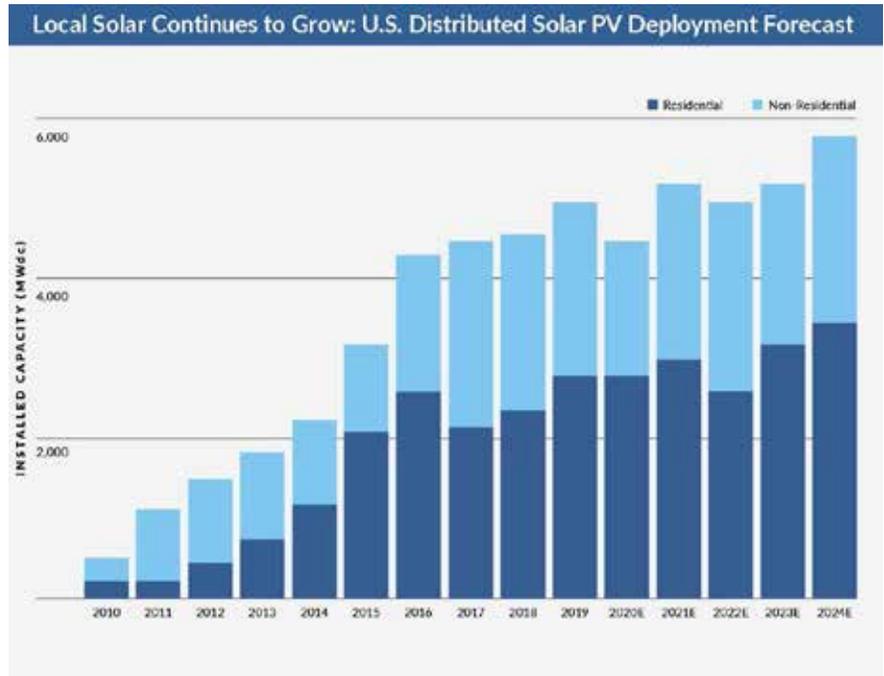
Whether it is through micro grid, district energy plant, or truly off-grid self-reliance, generating or distributing electricity outside the PJM grid is more efficient. The age of the main grid, along with the physics of long-distance transmission, results in a loss of roughly 35 percent of the power transmitted from centralized sources.

Being off the grid provides a benefit to the PJM grid by removing some of the demand from the system, but Dr. Alexis Kwasinski, an associate professor at the Swanson School of Engineering at the University of Pittsburgh, points out that the motives behind building district energy or micro grids are selfish and related to concerns about the grid.

“A traditional grid has a top-down approach where the focus is on the electric utility and generation. From there power goes down to the customers. With micro grids you have the opposite approach. It is a bottom-up approach that focuses on the customer. For that reason, much of the development of micro grids has been done for private users who want to improve the quality or availability of power,” Kwasinski says.

There are benefits to the shared grid that users will experience from the development of more DERs. Owners of micro grids or other DER can sell excess electricity back to the grid, adding capacity to the grid without increasing the existing utility-scale generation plants. But the inefficiency of the grid means that excess power would have a diminished benefit to grid users. The greater benefits from DER come from not having the users of micro grids or district energy plants drawing from the grid. That increases capacity available for those that don’t have the wherewithal to construct off-grid generating. It also reduces the wear-and-tear and maintenance needed on the aging common grid.

Kwasinski is part of the Energy GRID Institute at the University of Pittsburgh, which is studying ways to optimize the



Source: Vibrant Clean Energy

electricity grid and advance ways to expand the distribution of electricity. He points out that even the well-intentioned construction of micro grids could have long-term unintended negative consequences for the community.

“When a private owner does a micro grid, they have the resources. Micro grids are expensive to build. When you think about the design of the conventional grid, one of the benefits is that you end up getting all users the same power quality. If you start seeing too many micro grids, you will have too much power taken off the conventional grid and it will negatively affect those who cannot afford to build a micro grid,” Kwasinski explains. “There is a benefit to the whole to have a micro grid but the main reason for building a micro grid is to benefit the owner of it, not society as a whole.”

Technology allows renewable resources to generate power that is available and of a quality that is useful to even industrial customers. While technology can create a micro grid that powers an international airport, it does not yet allow for micro grids to be linked. That means the use of micro grids or district energy is not the solution for modernizing or adding resilience to the interstate grid. To do that will take an investment the size of which public utilities cannot justify.

The interstate grid takes advantage of the economies of scale to cost justify the massive investment needed to build and maintain the transmission of electricity. Like much else in America’s economic infrastructure there is an inequality in the development of a power transmission network. Cities provide a density of customer base, allowing utilities to collect more revenue per mile of infrastructure than in rural areas. Urban customer bases provide steadier, heavier demand for power, which makes utility-scale power cheaper. These



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economic realities kept much of rural American without centralized power until the government-funded Public Works Administration used the available labor created by the Great Depression to build projects, like the Hoover Dam and Tennessee Valley Authority, which brought electricity to less-populated states.

Utility-scale power is still much cheaper to produce and distribute – even with the inefficiency of the grid – but there is evidence that a system that uses DER can augment centralized power generation.

The Model for Utility-Scale and DER

The inefficiency of the interstate grid and the drive to replace the grid with renewable energy sources are both born of the extraordinary growth in demand for electricity. U.S. electricity consumption is still roughly 15 percent of global demand and is expected to grow by 115 percent by 2040, even with a growing emphasis on reduced consumption and energy efficiency. Utility-scale generation – the traditional coal, gas, and nuclear power plants – have provided the horsepower to meet the growing demand, but those plants also created the environmental damage that renewable energy seeks to undo.

Renewable energy generation is the driver of DER. While the sources of DER are varied and include technology in addition to generation, the use of DER has been growing. Explaining the economic sense of using distributed energy resources is difficult, especially since energy modeling focuses on utility-scale generation and transmission. The expanded use of renewable sources has been increasing the use of distributed

Photo by Thurner Photography



transmission. In 2019, one-third of all U.S. spending on electricity was through distributed grids.

Improving the interstate grid is stubbornly expensive. Customers and public utility commissions are loath to foot the bill to modernize the grid to make it resilient, especially since doing so points the markets towards centralized power generation at a time when DER is growing. In December 2020, energy modeler Vibrant Clean Energy (VCE) introduced a model that looks at the entire energy system, including distribution grids. VCE modeled DER as resources to help manage the grid, whereas traditional energy models approached the distribution grid as electricity load. Distribution grids are no longer just downstream users of the electricity from the high-voltage transmission. They include resources that can be used flexibly to add resilience and boost capacity. What the VCE model revealed was that DER could improve grid performance for both utility-scale and renewable power. That means the most efficient electricity system would require more DER and more centralized power, especially if the U.S. intends to be carbon neutral by the middle of this century.

As its name implies, Vibrant Clean Energy was not looking to make the case for increased centralized fossil fuel power plants. Its model recognized the need for traditional power plants to meet demand and, instead, sought to identify the path to the lowest cost grid by integrating all the available resources.

VCE's model takes advantage of existing technology and micromanages all known DER across the U.S. down to the two-square-mile radius, simulating the management of energy



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Mill 19 at Hazelwood, powered by the largest rooftop solar installation in Pittsburgh. Photo by RIDC

transmission dispatch at five-minute intervals. That meant using all available resources for generation, storage, and transmission, an accumulation of data points not previously modeled. The model further factored in decades of weather data. VCE approached the energy model as if there was one integrated system and discovered that the electricity system in the U.S. could decarbonize by 2050 and save \$500 billion.

The model sought to establish the costs of moving to a carbon-free electricity system (meaning a system free of carbon emissions) by 2050. VCE tracked the electricity savings for the outcome of what it called business as usual – the result of existing mandates and policies – versus those of a clean energy system that reduced carbon emissions from power generation by 95 percent. VCE also included the active use of DER in both scenarios. That meant modeling the impact of measures like drawing electricity from solar-powered batteries during a peak load instead of firing up more generation or adding solar generation in areas with little currently. VCE assumed the increased management of DER would result in an additional \$10 billion invested in renewable energy by 2030.

The results showed that using DER in both business-as-usual and clean energy scenarios saved hundreds of billions compared to not using them. The model showed that using DER in business-as-usual conditions saved \$301 billion, meaning that integrating distribution grids that used DER saved a substantial amount of money even if no clean energy measures were taken. Moreover, the clean energy scenario, enhanced by integrating DER, saved \$88 billion over doing business as usual, suggesting that pursuing a 95 percent reduction in emissions was cheaper than not pursuing that goal.

VCE modeled an energy market that was actively moving to reach carbon-free status by 2050. That may be optimistic in its assumptions, especially if the model assumed that the free market would be a primary driver of the change. Consumer and business customer pressure to decarbonize will doubtless grow over the coming decade. Even today, carbon-heavy corporations like U.S. Steel and Exxon Mobil have made pledges to be carbon-free by 2050, or earlier. It will not be easy to get an industry that is reliant upon cheap fossil fuels for 60 percent of its generation capacity in 2020 to decarbonize. Can the U.S. shift its attitude 180 degrees in one generation?

Building the Changing Energy Sector

Perhaps nothing reflects the shifting attitudes about the sources of energy in the U.S. so much as the May 19 announcement by the United Mine Workers (UMW) endorsing the Biden administration's clean energy plan, or at least portions of it. As part of the administration's \$2 trillion infrastructure proposal, billions are set aside for training and placement of coal, gas, and oil utility workers who are displaced by the transition to renewable energy sources. Government investment in coal mine sites, which it proposes to use for carbon capture and sequestration sites and to redevelop for other commercial uses, is also



intended to create opportunities for jobs with wages comparable to mining.

UMW President Cecil Roberts portrayed the union’s support of those training and business development measures as getting ahead of the problem that has plagued his membership for decades, that of the declining role of coal in power generation. Once the cheapest source of electrical generation, coal has seen years of environmental regulation and market forces elevate natural gas as the preferred source for utility-scale generation. Rather than fight inevitable change in how energy is produced, the UMW seeks to benefit its workers to the greatest extent possible, whether by protecting the remaining bituminous coal used for non-generating purposes or preparing miners for a life after coal.

In a state like West Virginia, life after coal probably seems unimaginable. In 2020, however, the Public Service Commission of West Virginia granted a \$90 million certificate to Dakota Power Partners to allow the development of a utility-scale solar farm in Raleigh County, near I-64. The completed farm will power 16,000 homes and employ a handful of permanent workers, but the business development leaders in West Virginia hope that the presence of such a facility will attract employers from outside the state.

Solar power represents a tangible construction opportunity within the energy sector. Prices for residential solar installation have fallen to the point that there is a considerable market. Hundreds of permits for residential solar panels are issued

each month in Allegheny County during the building season. The market for utility-scale solar is less mature, but very attractive. There is currently about 100 gigawatts of rooftop solar of all sorts. The clean energy model VCE ran assumed an additional 75 gigawatts of distributed solar and 27 gigawatts of storage by 2025, and more than four times that by 2050. That’s a \$65 billion opportunity at today’s prices. Utility scale could be 10 times that.

The path to a carbon-free U.S. over the next 30 years will not be a straight one. That’s not true of the energy demand. With each year the energy efficiency of the devices and equipment we use improves, but so does the number of devices and equipment. And for all the gains made by renewable sources of electricity, fossil fuel sources remain the dominant generating source. Even as that changes, more non-renewable capacity – particularly natural gas – will be added.

During the 2010s, there was a boom of natural gas-fired combined cycle plants built in the Western half of Pennsylvania. At one time there were a dozen plants in planning for the area between the Susquehanna River and the Ohio border. Most of these were built on the sites of former power plants or brownfields, and it has been difficult to overcome environmental opposition for those that have not been started, but the demand for the capacity remains. One such plant, Invenergy’s \$600 million Allegheny Energy Center proposed for Elizabeth Township, has moved to the front burner. If approved, construction could start in 2022.

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At the other end of the spectrum, there has been a boom in site specific CHP plants. The presence of abundant natural gas in Western PA, along with extremely low prices for the commodity, make the construction of plants that use the excess heat from generating electricity to warm facilities. Allegheny Health Network has invested in CHP plants at its Wexford Hospital and Forbes Regional Hospital. Allegheny County built a plant at the Courthouse, and one is under construction at the Allegheny County Jail. The plant at the Pittsburgh International Airport is not currently using the excess heat for its facilities but the project was built with the mechanical systems to do so. And Pittsburgh's central business district may be powered by a CHP by the middle of the decade.

On February 25, 2021, Clearway Community Energy reached an agreement with the City of Pittsburgh to replace Pittsburgh Allegheny County Thermal (PACT) in providing heating to downtown Pittsburgh. The PACT steam system will shut down in June 2023. The City of Pittsburgh will take possession of the system of steam tunnels utilized by PACT and contract to have them grouted or otherwise filled and repaired, clearing the way for Clearway to provide combined heating and power through a district energy facility.

As of late June, PACT's members had not finalized its plans for the system conversion or the disposition of the PACT infrastructure. Given the nature and condition of the steam distribution system, replacing it seems a foregone conclusion,

but decisions about what Clearway will develop are pending PACT's decisions, according to Scott Barr, Clearway's director of sales and marketing. Based upon its business model throughout the U.S., Clearway is capable of building and supporting a combined heating and power solution or replacing the PACT thermal system only. Combined heating and power is a solution that Peoples Gas had been promoting for Downtown for several years.

Navigating the path to a future that does not include fossil fuels or emissions will take new technologies, changed behavior, and many years. There is uncertainty about how that future will look. There is no uncertainty about the future of our energy demand, however. The U.S. has some energy stresses ahead. While the next decade or two may not see the U.S. facing the kinds of energy crisis facing California and Texas, the root causes of the problems in those states exist for the nation. Natural disasters like Hurricane Katrina and Hurricane Maria highlighted the perils of being unprepared or neglecting to modernize. With each year that passes after a natural or man-made disaster, the human tendency to forget or minimize the risk of another occurrence grows.

No matter what the technology for energy generation is in 2050, there is little of the infrastructure for it in place today. It is unlikely that the future holds a greater role for the coal or gas plants that are powering 2021. Whatever the energy market of the future holds will need to be built new. **BG**

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Photo by Pittsburgh International Airport/
Blue Sky News and Beth Hollerich



PROJECT PROFILE

PITTSBURGH INTERNATIONAL AIRPORT MICRO GRID

In 2014, when drilling for natural gas began at Pittsburgh International Airport lands, there was anticipation that the royalties paid by CNX to Allegheny County would bring economic development opportunities to the region. At the beginning of June 2021, one of those opportunities began operating. A development-design-construction team led by Peoples Gas, PJ Dick Inc., and LLI Engineering completed a micro grid and solar farm that enables the airport to generate enough electricity to power its operations using the natural gas from beneath its property.

Started in July 2020, the airport's micro grid involves a 23 megawatt (MW) gas generating plant, consisting of five reciprocating generators, plus a solar array of 7,800 panels located on eight acres adjacent to the airport's entrance that produces 6 MW of electricity. The micro grid provides resilience to the airport and is set to produce more electricity than is needed to power all the airport's operations.

The origins of the micro grid came from informal discussions in 2017 between Morgan O'Brien, then CEO of Peoples Gas Co., County Executive Rich Fitzgerald, and Christina Cassotis, CEO of the Allegheny County Airport Authority (ACAA). O'Brien suggested that a combined heating and power plant (CHP) and

micro grid would be a way to increase the use of the airport's gas resources that would increase the royalties the county received. ACAA liked the idea of having power redundancy and thought the project could be part of its terminal modernization program. It engaged its consultant, Burns Engineering, to draft a request for qualifications and a request for proposals (RFP) that could be used in a public selection process.

"We had four main goals that we wanted the respondents to address. Those were: to provide more resilient and redundant energy to the airport, lower the cost of electricity if we could, support our natural gas industry, and support our sustainability goals," says Tom Woodrow, vice president of engineering, Allegheny County Airport Authority. "We had over 80 firms request the documents and we received 16 packages. We short listed that to eight firms and issued a request for proposals."

ACAA used consultants and assembled experts, many from outside the authority, to review the RFP responses. Especially important was the extensive pro forma financial section, which ACAA had drafted to verify that the proposed solution would result in a net present value over 20 years. From those proposals, ACAA interviewed two teams and selected the one headed by Peoples Gas.



“We formed a team led by Peoples and we brought CNX on board. Then we put together a team that included PJ Dick on construction, LLI for design, and IMG Energy, which knows how to operate the plant. We also brought in EIS as the solar expert,” says Jeff Nehr, vice president production and business development for Peoples Gas. “We had people familiar with constructing on airport property and qualified within these disciplines of the energy generation. We wanted to position our team so that we had partners that satisfied all the areas of discipline that the airport required, but were local sources.”

“LLI was brought in by Peoples, along with PJ Dick, IMG and 2020 Capital Group as the financial modeler. That team realized that the minimum load at the airport was much larger and flatter than anticipated, meaning that the variance between the minimum and the peak usage was small,” recalls Jamie White, president and CEO of LLI Engineering, Inc. “With the terminal modernization program there was going to be a larger load. We suggested that it would make more sense financially to build a larger plant. What was proposed was an alternate solution that included a 23 MW gas generating plant that also included the 6 MW of solar that was requested in the RFP. That model proved to be the financial choice of the airport authority.”

Woodrow says that the next big challenge was the legal drafting of an energy service agreement with Peoples Gas, which took 11 months and was finally consummated on October 24, 2019.

“There was a lot of back and forth over details. We were coming up with a new agreement that was going to last 20 years. It was me and one of our lawyers on one side and Jeff Nehr and one of Peoples’ lawyers on the other. After that, the design and construction were easy,” he laughs.

The terminal modernization program played a key role in several of the major decisions that were made about the project

once the Peoples Gas team was selected. That started with the location of the generating plant, which was sited close to the existing landside terminal in the original plan.

“The location was on the site where the access road and mobilization for the terminal modernization program will be,” says Mike Roarty, project manager for PJ Dick, Inc. “There was some concern about security, but the biggest concern was that the site was going to be the first thing you see when you arrive at the new terminal when it’s completed. I think the Airport Authority thought that was not ideal aesthetically.”

A new location near the hangars was chosen for the plant. The decision created challenges that the original plan did not. The new site was too far from the terminal buildings to make using the waste heat from generating electricity feasible. The new site also transformed a short direct electrical connection from the plant to the terminal building into a miles-long cable pull.

“The biggest challenge was integrating the generators with the systems within the airport. Those were some lengthy pulls of wire,” says Ken Chaffee, project manager for Sargent Electric. “The one leg we ordered somewhere over 27,000 feet of wire. We pulled from the generating site to the terminals, through the tunnels that follow the rail system, and ended at the Duquesne Light substation by the baggage claim.”

“One of things that helped was there was existing raceway that we could use,” notes Roarty. “That was key because we had a limited number of raceways, and we are also serving another switch gear that feeds the other side of the hangars.”

The design that the Airport Authority accepted used generating equipment made by Austrian-based Jenbacher. Given the option of how to enclose the Jenbacher units and build the plant, the team made a decision that proved ideal

for the pandemic conditions they were about to experience.

“We had priced doing a building enclosure around the generators or doing it modular. It was more economical to do it as a modular approach,” recalls Roarty. “The modular units were fabricated by Jenbacher in Austria, and they packaged them so that each unit looked like three large shipping containers. Each one has the engine and the generator set. One of the modules has the controls. The other module has the exhaust system and the selective catalytic reduction unit (SCR). That makes up the heart of the generating system.”

White notes that the SCR brings the emissions levels of nitrous oxide down and improves the overall quality of the region’s air by replacing power generated at local plants with higher emissions.

“The Environmental Protection Agency evaluation of the emissions found that the improvement in air quality for the region was greater than all the LEED-certified buildings combined,” White says. “The emissions coming off this plant are better than what is coming off a utility-grade power plant. This plant saves more than 50 percent of those emission compared to other generation sources.”

With the heart of the plant being manufactured and fabricated in modules, the management of the construction site was streamlined. That became more important because of the pandemic. PJ Dick was responsible for preparing the site and constructing the foundations for the modules. With fewer subcontractors on the site, there were fewer chances of COVID-19 infections. But the project schedule then turned on the ability of Jenbacher to maintain its production, and the units to be shipped on time during a global pandemic.

“The challenge was with the logistics. The units were coming from overseas so the communication of how things were arriving was not always clear. The units were barged into New York and then shipped to Pittsburgh in the middle of the pandemic,” says John Jordan, president of McKamish Inc., the project’s mechanical contractor. “The manufacturer was not allowed to have its people into the country to help out because of the pandemic. There were third- and fourth-party firms that didn’t have people available as originally scheduled. To make it all happen was a real accomplishment. The team rose to the key occasion to get it done. There was great coordination between PJ Dick and our people.”

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Overhanging any other challenges on the project was the fact that Pittsburgh International Airport is not the type of facility that can tolerate having the wrong wire cut or a piece of equipment block an access road. Jeff Nehr says that his experience working with LLI Engineering on CHP plants at hospitals, and LLI's decades of experience with mission-critical Verizon facilities, were important factors in their selection. Jamie White points out that there is little comparison between an airport and a telephone switching station.

"This is a critical operating facility. That's like the Verizon buildings or the hospitals, but it's much more so. We have multiple hospitals and multiple Verizon buildings. We only have a one international airport and for that to be shut down for even a few minutes would be very bad for the region," White says. "To make sure that the airport worked 24/7 without outages, we had to work with the airport on all their existing gear, and work with the terminal modernization team to put an automated load shedding system in place."

Jenbacher shipped the generating units in September 2020 and the construction was completed in time for the units to be tested and operational by June 1 as scheduled. With the completion of an energy agreement in July, the airport's microgrid will begin selling the excess electricity generated back to the PJM electrical grid, increasing the value of the project. The completed generating system was prepared for piping the excess heat to other facilities should the ACAA choose to do so in the future. White says LLI has been studying whether heating the de-icing systems fluid would reduce the volume needed for de-icing operations.

The \$20 million project allows the Pittsburgh International Airport to generate power for its operations using natural gas from the airport property. The project's solar farm is located on nine acres of that property that was destined not to be developed. It is a project that makes good economic sense. Nehr thinks the security value of the project should not be overlooked.

"What made the story of using gas from the airport property a better story was that we were hardening the airport. If there was a catastrophic electric outage when the utility was unable to supply the airport, they can run independent off the electric grid and flights can come and go, and we would have one spare generator," he says. "The hardening piece of the story is one that is very important. The proposal we put together was built around efficiency, environmental savings and hardening the airport by adding a lot of resilience."

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"We couldn't have done it without the airport. Christina Cassotis and her team are phenomenal to work with," Nehr continues. "We're very pleased to be a part of the project and look forward to a long business relationship."

White expressed gratitude to the firms involved for persevering through unforeseen conditions that literally happened only once in a century, noting that Peoples Gas also maintained focus on the project through a change in ownership and leadership.

"It was a really strong team effort. Peoples Gas was a great partner, and the airport was a great client. Christina Cassotis can be tough but is very fair and positive to work with," White says. "PJ Dick's team did a fantastic job managing the project, meeting schedules, and hitting budgets during COVID."

"I can't give it any less than an "A" if we're assigning grades," concludes Woodrow. "We were able to get into construction in the middle of COVID and get equipment here from overseas. We didn't have any supply chain issues or labor disruptions or COVID problems. Even though we broke ground right in the middle of the pandemic, the team met the schedule." **BG**

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PROJECT TEAM

PJ Dick Inc.	Construction Manager
Peoples Gas Company	Owner/Developer
Allegheny County Airport Authority	Owner
LLI Engineering, Inc.	Engineer/Architect
McKamish Inc.	Mechanical Contractor
Sargent Electric Co.	Electrical Contractor
Ran-Den Excavating Inc.	Excavation
Marsa Inc.	Masonry
MultiMetal Inc.	Structural Steel
Estherlee Fencing Co. Inc.	Fencing
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FIRM PROFILE

HATZEL & BUEHLER, INC.

BY HILARY DANINHIRSCH



HATZEL & BUEHLER, INC.

Electrical Construction Since 1884

It's not always easy to break into an established market when you're the new kid in town. But when Hatzel & Buehler (H&B), a union commercial electrical contractor headquartered in Delaware, had the opportunity to purchase an electric company and make it part of the larger Hatzel & Buehler corporate family in 2014, it fulfilled the company-wide goal to expand into the Pittsburgh market.

Over the past seven years, as it has settled into its Sharpsburg offices, H&B has found its niche in Pittsburgh, while its customer base has embraced Hatzel & Buehler, a company that installs and builds the essential services of electrical systems for businesses and maintains them over the lifetime of the system.

History

Hatzel & Buehler's rich history is a testament to its staying power. The company as a whole is only one degree away from Thomas Edison, whose name is synonymous with electrical power generation. The founders, John D. Hatzel and Joseph Buehler, worked with Thomas Edison as master electricians when Edison opened an electric generating station on Pearl Street in New York City in 1882, the first such publicly owned and operated business.

Two years later, in 1884, Hatzel and Buehler started their partnership in New York City. Over the decades the company's clientele expanded to include wiring such grand residences as the Biltmore Estate in Asheville and The Breakers in Newport and even worked on multiple exhibitions at the World's Fair of 1939. The company also provided electrical installation services to an array of landmark buildings such as New York Telephone Company; the Chrysler Building; the Port Authority Bus Terminal in NYC; the Renaissance Center in Detroit; the Ford Motor headquarters in Michigan; several terminals at JFK Airport; and Epcot Center at Walt Disney World.

Eventually, the company expanded to ten markets, currently representing a total of seven states; Pittsburgh is the tenth and latest market for H&B.

Hatzel & Buehler is also the longest continuous member of NECA—the National Electrical Contractors Association. In fact, one of the company founders served as its president. The local H&B supports the Western PA chapter of NECA.

Casting A Light upon Pittsburgh

Hatzel & Buehler's CEO has always believed that the company would fit hand in glove here in Pittsburgh because Pittsburgh is a strong market that is both relationship-based and service-based. When Franklin Electric came up for sale, H&B acquired the company's assets, believing it was the right opportunity and the right fit for the culture of the company as a whole.

Indeed, Franklin Electric, with its 100-year foothold in the Pittsburgh electrical market, was the ideal stepping stone H&B needed to enter the region.

John Java, vice president-branch manager in Pittsburgh, explained that H&B is regionally-based. In other words, each regional division is built and formed for the market in which a company branch is located and is focused on what makes sense in those markets.

Because of its regional focus, all the H&B markets are unique. In Manhattan, for example, that office has corporate clients and office buildings, while in southern Ohio, the focus is on industrial clients. "Each office has different needs and hires different personnel to support those needs," said Java.

As the markets in the region is what determines the industries, it should be no surprise that in the Pittsburgh region, H&B's client base is all commercial, with a specific spotlight on the financial, higher education and medical fields.

Representative area clients include UPMC Senior Living communities, University of Pittsburgh, Allegheny Health Network, the Duquesne Club and PNC. Despite the 'big names,' Java said that no job is too small for the markets that they serve. "If a client needs an outlet to be changed or to build a new, five-million square foot building, we're there for them. It's not about the size of the work; it's about the person we're doing the work for," he said.

A field of expertise that has perhaps gone under the radar is the industrial work into which the Pittsburgh branch delves: power distribution, medium voltage work, facilities, processing and manufacturing. For example, the company just finished a

product testing facility project for Elliott Group in Jeannette, PA.

The company's subsidiary, Bluestone Communications, is a 'low voltage' telecommunications service provider that works independently at a local Pittsburgh office, but the companies often work together as a single source to provide blended electrical services when necessary. "To call them low voltage is a bit understated; they have a diversified comprehensive portfolio services, distributed antenna systems, fiberoptic, and sound masking," said Java.

A Local, Client-Centered Approach

"Even though we were a large company and had the resources of a large company, we were going to have a local approach." Java said that his Pittsburgh employees appreciate knowing that they can sleep in their own beds at night, knowing that the clients are all in the area.

"All of the people in our office work and live in Pittsburgh; 99 percent of the employees are from Pittsburgh, and we concentrate our business in the Pittsburgh office. Everyone in this office is focused on our clients in this region—they know we're there for them. We're focused on this market and them as a customer. We are local, yet we have the backing of a larger company, both financial- and resource-wise," said Java, who is also from Pittsburgh.

This client-centric way to do business has served H&B well corporate-wide as well as regionally.

"We're not always chasing the next thing; we are there for our current clients, in good times and in bad times. That is the most important part of our business: the clients we do have," said Java, of the company's commitment to building and maintaining longstanding customer relationships.

In order to maximize job efficiency, H&B as a company utilizes the most advanced technology to manage projects, from Autodesk to BIM to Accubid to Microsoft Office Project, as well as supplies staff with all the tools it needs to get the job done, such as smart phones and tablets.

It's all part of being a full-service company, as the company motto has always been about setting the standard of excellence in the electrical contractor industry and being the best service provider that they can in the region that they're in.

"We're always about maintaining successful customer relationships, and that means constantly implementing the latest or the new methods and products that help us improve efficiencies and productivity and provide a constant high level of customer support. That means partnering with clients to complete projects at the highest safety level most efficiently and most importantly, on schedule," said Java.

"One advantage of working with H&B is that while we may not be the largest contractor regionally, it's basically like having a group of ten companies---ten peer groups---and having access to whatever is new or whatever is the latest in the electrical industry," said Java.

Therefore, the companies can learn from each other and pass along those lessons and experiences.

"Whatever the latest trend is in the industry, somebody, somewhere in our office is out there testing it and working through it; we have that resource, we have those experiences to feed off each other and make it efficient and add value to what we do," he added.

Java reiterated that it's about the customers, and the employees. And a penchant for building things. "We love to build things; that is what draws you to this industry," he said.

Java himself is a Penn State graduate and obtained his electrical engineering degree. He interned with a local electrical contractor and stayed in the field because he liked the hands-on experience. Java worked on some high-profile projects in Pittsburgh, working his way up from project engineer to project manager. "When Hatzel & Buehler came along with a management opportunity, I couldn't pass it up," he said.

A Bright Spark in Pittsburgh

After seven years, H&B has found its place, its customers, and its niche in Pittsburgh.

As the oldest electrical contractor in the country, and possibly even the world, Java said that the company's history and longevity proves that, "We're not in it for the short term—we're in it to have long-term relationships with clients and be here when they need us. Whatever electrical need they have; we have the team and the expertise to handle it." **EG**



John Java

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LEGAL PERSPECTIVE

START ME UP AND GIVE ME SHELTER: PRACTICAL STEPS TO MITIGATE RISK IN THE ANTICIPATED POST-PANDEMIC CONSTRUCTION BOOM

BY ROSS GIORGIANNI AND MICHAEL KLEIN

Thankfully, the construction project suspensions, delays and shutdowns associated with the COVID pandemic are in the rearview mirror. Hopefully, many of the costly (in terms of direct expense and productivity) job-site requirements and restrictions will also soon be a thing of the past. Industry statistics and continued talk of a massive infrastructure bill reflect growth in the industry and returning opportunities in numerous sectors, with stalled projects resuming and substantial new work getting started. As the noted construction industry experts, the Rolling Stones said – If you Start Me Up, I'll Never Stop.

Obviously, this is very encouraging news. Like everything; however, too much of a good thing can be dangerous. That same well-known band of successful businessmen (and British Bad Boys) also knew when to seek shelter – If I Don't Get Some Shelter, Lord I'm Gonna Fade Away. This article discusses certain risks associated with the anticipated post-pandemic construction boom, and utilizing current information and lessons learned from the pandemic, provides some practical measures to control and minimize those risks. Ideas designed to Start You Up, without having to scramble for Shelter.

WHAT COULD POSSIBLY GO WRONG?

Contractors are understandably anxious to take advantage of every opportunity that this post-pandemic market presents, and to recover from the cash-flow challenges of the last year. Nevertheless, the current market demands a degree of prudence and caution even more than normal (if that is possible). Various land mines and traps for the unwary remain from the pandemic. Careful and reasonable pricing, caution not to exceed productive capacities, project management and meaningful review and negotiation of contract terms – are all required.

Some serious impacts of the pandemic remain. For instance, procurement difficulties and commodity pricing continue to be affected. Supply chain disruptions, extended lead times and price escalations continue to impact contractors as a result of impaired production and supply combined with increasing and continuing demand. In some cases, lumber prices have reportedly increased more than 80 percent and steel prices have reportedly increased more than 60 percent. Prices of other metals, plastics and fuel are also up. Labor is in short supply and increasing in cost. The availability of certain types of equipment remains limited, and the ability to obtain parts needed to repair or maintain equipment remains difficult. There is much speculation but no certainty as to if or when pricing and availability will return to normal.

The Bureau of Labor Statistics' June 15 report on construction material costs highlighted the challenges facing the industry.

Producer price index for all inputs to construction rose 24.3 percent compared to May 2020, while the index for new nonresidential building construction (which includes all costs, overhead, and profit) rose just 2.8 percent. Disruptions in the supply chain are the main cause of the inflation and are contributing to an increasing number of delays, according to an Associated General Contractors' (AGC) survey from the spring. In that survey, 52 percent of the AGC members surveyed said they had experienced delays as a result of material or product shortages. Members also cited worker shortages, fears of infection, and shortages of personal protective equipment for delays. Only 29 percent of the members said they had experienced no delays.

There is also the possibility that in the event of a COVID resurgence or variant, or some other new disruptive pandemic, that certain of the currently declining impacts could return. Shut-downs, suspensions, limited numbers of workers, distancing, wash stations, limited access points and/or protective equipment could potentially be re-implemented in these events.

Under these conditions, contractors are well served to carefully consider all of these factors and possibilities in estimating and pricing, and to identify multiple alternative sources that can be utilized in the event that a supplier becomes unable or unwilling to reasonably perform.

SHELTER – IT'S JUST A (GOOD) CONTRACT AWAY

It is also critical to have as many protections as possible in your contracts to guard against market fluctuation and other impacts that can consume profit margin. In a perfect world, contractors could negotiate and include provisions that clarify that their agreed upon prices, delivery dates and schedule are based upon current prices and availability of materials, labor, fabrication, subcontractors, suppliers and transportation; but that the contract sum, completion date or other requirements shall be equitably adjusted to account for any impacts, volatility or unavailability resulting from causes beyond the contractor's control, including the COVID pandemic and/or governmental directives related thereto. Unfortunately, a provision of this nature and scope; however, will not be available in many cases.

A type of contractual clause that can be used to address market volatility (particularly for material pricing) is an escalation clause. Escalation clauses may dictate that in the event of a material price increase, the customer will be responsible for paying the increased amount. An important note that needs to be understood in discussing this or any other type of contract clause (i.e., escalation, force majeure, change-in-law, indemnity ...) is that it is the specific wording of

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the clause, as opposed to what type of clause it is characterized as, that is important and controlling.

Escalation clauses for example can come in any variety of forms. An escalation clause could be as simple as an agreement that the customer will be responsible for any increase in the price of any material required for the project that occurs after the contract is executed. Typically, however, escalation clauses will include additional levels of detail. The clause may:

- Only apply to a certain list of specified materials;
- Identify the prices for those materials on which the contract is based;
- Specify a certain percentage by which the price must increase to trigger the clause;
- Specify the notice requirements and supporting documentation that must be provided to support an increase; and/or
- May provide for a credit to the owner in the event that material pricing falls (de-escalation).

Regardless of the level of detail, the purpose of an escalation clause is to recognize the known risk that material prices may increase, and to fairly allocate that risk. Owners are often resistant to escalation clauses but may understand that recognizing and allocating a known risk will allow contractors to provide more accurate pricing, as opposed to having to include amounts to protect against potential price increases.

Aside from any escalation provision(s), of course, it is imperative that the contract documents and schedules realistically incorporate and account for the potentially long lead times that currently exist for various building materials and components.

Other types of contract clauses that have received such attention in connection with pandemic impacts and may come into play in the cases of ongoing or returning impacts are force majeure and change-in-law clauses.

Most construction contracts include a force majeure provision which excuses non-performance by either party to the extent it is caused by an extraordinary occurrence such as a natural calamity (hurricane, flood, etc.), riot or war. Again, force majeure clauses can come in any variety of forms or scope. Some may specifically include or exclude pandemic or governmental actions or may be limited to a specific period of time or may include detailed notice and supporting documentation requirements. Critical to most



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force majeure provisions from a contractor's perspective, is that while they do provide for excusable delay and relief from potential liquidated damages, they do not provide for additional compensation related to the delay or other resulting additional costs. Many force majeure provisions also include an element of foreseeability, i.e., the event must not only be beyond the parties' control, but also not have been reasonably foreseeable to the parties. For contracts entered into during the last year and going forward, for better or worse, COVID-related impacts are not entirely unforeseeable and may not fall under many force majeure provisions.

Change-in-law provisions are also fairly common in construction contracts and may provide a mechanism to recover additional costs resulting from a change in law applicable to a project that occurs after the contract is executed. These clauses have been utilized by contractors in circumstances where an owner directs the contractor to proceed under pandemic restrictions and requirements as opposed to suspending the work.

Many other common construction contract clauses are potentially applicable to circumstances of lingering or returning pandemic impacts. These would include clauses governing termination, suspension, liability limits, indemnity, and insurance. As always, the entirety of the specific applicable contract documents need to be carefully reviewed and analyzed in light of the specific impact or situation at issue.

ROLLING STONES DOWNSTREAM

Another important consideration and area where all these items need to be addressed, are the contractor's downstream subcontracts and purchase orders. Subcontractors and suppliers are equally, if not more, subject to the potential impacts described above. Measures that can help to mitigate the issues that are created by a non-performing subcontractor include back bonding and subcontractor default insurance.

The practice of requiring performance and/or payment bonds from certain subcontractors, in addition to the bonds provided by the general contractor, is known as back bonding. This serves to somewhat minimize the risks of subcontractor defaults, and in some cases may even be required by certain surety companies.

Subcontractor default insurance (such as Subguard policies) provide coverage, subject to certain conditions and limits, for additional costs incurred as the result of a subcontractor default. The distinctions between subcontractor bonding and subcontractor default insurance is a separate topic in and of itself, but a major distinction to understand is that generally while the bonds will provide a claim against a surety that may need to be litigated to obtain recovery, Subguard policies are designed to provide more immediate recovery. In either case, these measures will result in additional costs to the project, but in subcontractor default scenarios they can be very useful and should be considered for major subcontractors.

In connection with making a claim on a subcontractor performance bond or subcontractor default policy, contractors must keep in mind that the subcontractor "default" from which additional costs arise must be valid. In other words, to the extent that subcontractor performance issues or additional costs result from a force majeure or change-in-law event or a design deficiency, there may be defenses to the default, and in turn, defenses to the bond or default insurance claim. These scenarios can create challenging situations where the contractor may be put in the position of passing subcontractor claims upstream to an owner, while at the same time asserting subcontractor default to a surety or carrier. Communications and allegations in these scenarios must be handled very carefully, with complete transparency being critical. Handled properly, a contractor may be able to find some degree of shelter whether the subcontractor's claims passed upstream ultimately succeed or they do not, and the default is upheld.

Another important concept that, while always beneficial its importance is heightened in



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the current climate, is careful coordination of all subcontracts and purchase orders. All the subcontracts and purchase orders for a project should be consistent and coordinated, including with the contractor's upstream obligations. Subcontracts and purchase orders should not provide any greater rights to subcontractors and suppliers in any circumstance than the contractor has upstream with respect to the owner.

SHELTER – IT'S JUST A (GOOD) BID QUALIFICATION AWAY

Given the ongoing market fluctuations and volatility with respect to materials, equipment, and labor, including appropriate qualifications in proposals and bids is extremely important. This applies to proposals or bids being issued by suppliers or subcontractors to a general contractor, as well as to bids or proposals being issued by a general contractor to an owner.

Quoted pricing, delivery dates and schedule requirements should be specifically based upon then-current prices and availabilities, and subject to adjustment for sudden extreme fluctuations. The period for which the bid or proposal will remain in effect should be carefully considered and specifically stated therein. If commencement of the work will be conditioned upon the owner's issuance of a notice-to-proceed, the date by which the notice must be issued should be specifically stated, and all pricing, delivery dates and schedule requirements specifically linked to the notice being timely issued.

Finally, the virtual and remote activities that have become so prevalent during the pandemic are not likely to disappear entirely. Investment in an adoption of emerging technology and digitization is likely to become increasingly necessary. Proper implementation of the technology and digitization tools appropriate for certain construction projects should be explored as useful tools for monitoring and increasing productivity, workflow and work force management, progress tracking and scheduling. **BG**

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FINANCIAL PERSPECTIVE

WHAT'S NEXT? A NEW OUTLOOK FOR THE CONSTRUCTION INDUSTRY

BY MICHAEL P. HART

"Five years?" my client howled, as he reflexively lunged forward in his chair. Then, silence. The man slumped back in his seat, processing an answer he'd never contemplated. No further questions. No quips. Just a businessman slowly coming to grips with the economic consequences of COVID-19.

The seemingly innocuous question the man had posed? "How long do you think it will take for the economy to recover?" My answer: "It could take five years." And just like that, a few simple words had revealed that he needed to change his entire approach to navigating the post-pandemic road.

According to studies conducted by the McKinsey Global Institute and Oxford Economics, it could take five years or longer for businesses to recover to pre-COVID economic levels. Although the construction industry is starting to rebound and expected to improve throughout 2021, there remain short-term risks in the sector, driving the need for companies to become nimbler and actively manage these challenges quickly.

Labor Challenges

Construction was struggling before COVID in filling labor demand. The unfortunate truth is that the industry has been fighting a bit of a stigma for some time that's resulted in

fewer workers entering the space. But that reputation is slowly changing, with branding efforts underway to help young people understand the value of a construction job.

The need for workers in 2021 is significant. An industry association analysis of U.S. Bureau of Labor Statistics shows that this year construction companies will need to hire 430,000 more workers than they employed in 2020. Contractors, especially those in the residential sector, are struggling to find labor, which has driven up wages. According to St. Louis Federal Reserve Economic Data, average hourly earnings of construction employees reached its highest level on record in January 2021 (\$32.17). Highly skilled workers with construction technology experience are in high demand as well.

For both the short and the long term, hiring and retaining talent is crucial. Consider reviewing employee benefits, 401(k) plans and compensation packages to keep your people. Think through HR and recognize how you compare to your peer companies. Consider becoming a leader in recruiting and training the industry's future workforce. This is a good time to invest in equipping workers with the skills needed for the long haul.

Inflation

Many contractors are being heavily impacted by escalated costs. Inputs to construction have increased 13 percent year-over-year according to data available from the U.S. Bureau of Labor Statistics. Demand for softwood lumber, iron and steel have also increased dramatically over the last 12 months and continue to go higher. With the rise in residential construction, softwood lumber is particularly in high demand, having increased over 80 percent year-over-year and 7 percent from March to April 2021.

Other factors have contributed to higher input costs. Factories scaled back last year due to worker shortages caused by COVID-19 illnesses, government restrictions or the need for workers to take care of family members, including children when in-person schooling shut down. As the country returns

PRODUCER PRICE INDEX, MARCH 2021		
	1-Month % Change	12-Month % Change
Inputs to Construction	3.5%	12.9%
Inputs to Nonresidential Construction	3.5%	12.4%
Plumbing Fixtures and Fittings	1.0%	1.9%
Fabricated Structural Metal Products	3.2%	9.4%
Iron and Steel	13.5%	37.5%
Steel Mill Products	17.6%	40.1%
Nonferrous Wire and Cable	3.8%	19.1%
Softwood Lumber	6.8%	83.4%
Concrete Products	0.2%	1.5%
Prepared Asphalt, Tar Roofing & Siding Products	2.5%	4.3%
Crude Petroleum	11.0%	90.6%
Natural Gas	46.6%	178.3%
Unprocessed Energy Materials	22.3%	96.7%

Source: U.S. Bureau of Labor Statistics

to normal and government restrictions are lifted, anticipate factories to resume increased output over time, but expect continued strain in the short term. Some economists believe that by December 2021, lumber could be selling at one-third the price it was in April. Others believe residential building will be strong for several years, with demand and price for lumber leveling off around 2023.

Potential Impact of Selective Biden Administration Federal Tax Proposals

Proposed Increase in Capital Gains Tax Rate

President Biden is proposing a capital gains rate increase to 37 percent (from 20 percent) under existing law. The rates would be assessed on individuals with adjusted gross income that exceeds \$500,000 for single taxpayers and \$1,000,000 for married taxpayers filing jointly. Including a separate 3.8 percent tax on net investment income, the combined federal income tax rate on long-term capital gains and dividends would be 40.8 percent if legislation were to be passed. Separate state tax rates could put the combined rate north of 50 percent in some locales.

Observation: The Section 199A qualified business income deduction is not a deduction in arriving at adjusted gross income. Further, in 2022 the Section 461(l) \$500,000 excess business loss limitation will

again be in place. Net operating losses will be limited to 80 percent of taxable income. These types of loss limitation provisions have the impact of increasing adjusted gross income and, therefore, increasing the likelihood of the higher tax rate applying to gains and dividends.

The Green Book, a publication that explains the proposed tax proposals recently released by the U.S. Department of the Treasury, indicates the higher tax rate will apply to "gains" beginning on the date of President Biden's announcement (presumably on or around April 28, the date of his first address to Congress). Note that it does not separately address when the increased rate would apply to dividend income, but specific use of the word "gains" may imply that the effective date would not be until after December 31, 2021.

Potential Impact of Proposed Changes to Gift and Estate Asset Transfers

The donor or deceased owner of an appreciated asset would realize a capital gain at the time of transfer. For a donor, the amount of the gain realized would be the excess of the asset's fair market value on the date of the gift over the donor's basis in that asset. For a decedent, the amount of gain would be the excess of the asset's fair market value on the decedent's date of death over the decedent's basis in that asset.



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The Green Book appears to indicate that the tax would be borne by the party making the gift or the estate. Exceptions to the general rule include:

- \$1,000,000 per-person exclusion (up to \$2,000,000 for married couples) for property transferred by gift or held at death;
- Transfers in death to a U.S. spouse (prominently omitted are transfers to spouses in divorce);
- Transfers to charity (though certain transfers to split-interest trusts would be taxable);
- Certain tangible property; appreciation on household furnishings and personal effects (but not collectibles) would be excluded;
- Gain on sale of principal residence; the \$250,000 (\$500,000 married filing joint) gain on the sale of a principal residence would be excluded; and
- Small business stock under section 1202 would continue to be excluded.

While gain on the appreciation of family-owned businesses is not excluded, the Green Book does indicate that payment of the tax would not be due until the interest in the business is

sold or the business ceases to be family-owned and operated.

The proposal would also allow a 15-year fixed-rate payment plan for the tax on appreciated assets transferred at death, other than for liquid assets like publicly traded financial assets or for businesses for which the deferral election is made. The IRS would be authorized to require security at any time there's reasonable need. That security may be provided by any person and in any form deemed acceptable by the IRS.

Closing Thoughts on Proposed Federal Tax Changes

It's important to remember that the proposals summarized in the Green Book are just that – proposals. It's the U.S. Treasury's perspective on the President's policy vision, not enacted law. The Green Book is a high-level summary and does not contain statutory language or proposed bills. There is much negotiation that needs to take place, even among Democrats, before any of these items would become law.

Further, tax increases have generally not been retroactive, so there may still be time to plan in 2021 once more details become available. Additionally, a 37 percent capital gains tax rate is well outside the normal range, based on the past 40 years. Since 1981, the rate has fluctuated between 15 percent and 28 percent.

We may see proposals for an increase in the capital gains tax

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rate to 37 percent to help pay for deficits generated over the past 20 years (due in part to the global COVID-19 pandemic) or to pay for additional proposed programs, but it's just as possible that through political negotiation the effective date would change and a new capital gains rate could be agreed to that falls in between the current 20 percent rate and the proposed 37 percent rate (excluding the impact of the NII Tax).

PPP Forgiveness Eligibility for Change in Ownership Companies

The sale of your business could affect PPP forgiveness eligibility. In November 2020, the U.S. Small Business Administration (SBA) issued procedures notice to lenders that carries with it borrower responsibilities when there's a change of ownership, which the SBA defines as a transaction that falls into one of three categories:

1. The sale or transfer of at least 20 percent of common stock or other ownership interest of a PPP borrower, including to an affiliate or an existing owner of the entity;
2. The sale of at least 50 percent of a PPP borrower's assets; or
3. A merger of a PPP borrower with or into another entity.

All transactions require that if the new owner has a separate PPP loan, the borrower and the new owners are responsible for segregating and delineating PPP funds and expenses and providing documentation to demonstrate compliance with PPP requirements by each PPP borrower. In the case of a merger, the successor is responsible for segregating and delineating PPP funds and expenses and providing documentation to demonstrate compliance with PPP requirements with respect to both PPP loans.

Additionally, prior to closing any change of ownership transaction the PPP borrower must notify the lender in writing. Depending on the circumstances, different procedures may be required and could include obtaining approval by the SBA, which carries a decision timeline of up to 60 days, or establishing an interest-bearing escrow account. The risk for the borrower is that if they don't follow SBA change of ownership guidelines, the PPP loan could be at risk for not being forgiven and/or payment may be accelerated.

Employer Retention Credits

While companies engaged in residential construction may have seen increased demand, those in the nonresidential sector are more likely to have experienced a decline in the volume of jobs available. Continued reduction in construction spending into 2022 would make construction companies pricing candidates for extended Employee Retention Credits (ERC).

ERC currently allows employers to claim a refundable payroll tax credit for 70 percent of eligible wages and health insurance costs, up to \$10,000 per employee, per quarter, through the end of 2021. Qualifying entities include:

- Businesses with a 20 percent or greater reduction in gross receipts for a quarter of the year in 2021 as compared to the same quarter in 2019;
- Businesses with fewer than 500 employees, which may include wages and health benefits when calculating the credit regardless of whether the employees were providing services; or
- Businesses with more than 500 employees, which may only include wages and benefits paid to employees who were not providing services when calculation the ERC.

It's necessary for every borrower to quickly determine if they're eligible for the ERC and, if so, to determine how it may affect PPP loan forgiveness. Schneider Downs has a dedicated team of experts who can lead you through the evaluation on how best to maximize the use of these various programs.

Looking Ahead

The Biden Administration is now focused on an infrastructure package that promises to accelerate public construction's recovery in the coming quarters. With the economic revitalization still taking shape, here are a few actions to consider guiding you through the uncertain times.

Constantly update forecasts and contingency plans. Create rolling forecasts that incorporate new data and identify areas of risk, particularly regarding cash flow. Develop trigger points to take further action based on defined business results.

Track costs and inflationary pressures from suppliers. Communicate this impact on your business to customers. Add language to contracts and bids requesting price increases based on elevated input costs, with supporting information sourced from published data, like that from the U.S. Bureau of Labor Statistics.

Evaluate vendors and purchasing policies. Your entire supply chain is affected. With inflation for input materials continuing to constrain the industry, take time to review and update your purchasing policies. Create a list of all vendors and evaluate whether you're getting the best deal for the volume you purchase. Understand which vendors can provide you with the supplies you need and pivot, as necessary.

Critically think about the materials you use. With lumber prices spiking, review alternative building options that could lower the cost to build.

Divest of excess assets. Optimize your inventory levels to match demand. Part ways with unnecessary equipment or other assets. While you may not receive optimal prices, cash is king right now.

Remain current on the impact and opportunity of legislative changes. In light of the constantly changing landscape, it's important to make sure you understand the implications of current laws. Speak with your professional

advisors to ensure you're taking advantage of available opportunities.

Start succession planning. Exit and succession planning is one of the most important strategies you'll need to implement throughout the life of your business. Whether you're ready to start today or in 10 years, it's never too early to begin discussion.

Be mindful of potential investments. The pandemic has taken its toll on businesses and owners who may be motivated to reduce their risk profile. Investments could provide much-needed skilled labor and/or equipment, a niche specialty, or strengthen your current market share. Evaluate technology and software options that could help your business be more efficient.

Get analytical. A deep-dive into your company's data could provide significant improvement opportunities. Areas where analytics can help decision-making include customer, product and order profitability, price and cost performance and inventory maintenance.

Evaluate financial structure. Long-term assets should be paired with term debt or a mortgage. Working capital assets should be matched with a line of credit. Confirm that your balance sheet is correctly structured and make sure any line of credit is large enough to bridge potential cash gaps.

Whatever you do, don't wait to take action.



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MANAGEMENT PERSPECTIVE

CRITICAL TRAINING ACADEMY TARGETS INFRASTRUCTURE WORKFORCE

Like many economic development professionals, Mike Coonley, former executive director of Armstrong County Industrial Development Council (ACIDC), was always looking hard at opportunities to attract new businesses to Armstrong County. Coonley also felt the frustration of being unable to help employers in his county find skilled workers during the past decade. The problem in Armstrong County was the same as in most places in the U.S.: aging workforce, little in-migration of younger workers, and a decades-long shift towards college education for all. In 2017, a chance meeting started an initiative that could solve both problems.

"We had a summit and the moderator we used was a former energy executive. We were talking about different business attraction ideas when he mentioned that he had a friend that was kicking around an idea that was looking for a home," Coonley recalls.

The idea was for a "life size" training center that would serve the needs of the utility industry. The goal was to enhance the training trade schools and union apprenticeship programs provided by creating a mockup of the conditions that utility workers faced daily in building and repairing the underground infrastructure that served regional communities.

"It was a very preliminary discussion. We had land. We had interest and eventually we began to piece together what it would look like, what we would need to make this happen," recalls Coonley. "We started doing more research to find out if there was a genuine need in the energy sector for high skill training. We talked to the gas companies and electric companies and discovered that those companies were trying to solve the problems caused by a limited workforce, improper training, and the outsourcing of work to subcontractors."

As the idea began to get legs, Coonley reached out to the Energy Innovation Center Institute, Inc. (EICI). With ties to the region's universities for energy research and development, EICI also had relationships with the utility companies, trade unions, and a head start in providing post-graduate education. EICI has been signed by Shell Chemicals to provide the on-site orientation and safety training at its new plant in Monaca for the first three years it is operational.

"We got involved at Mike's invitation. The idea was to use the property at Northpointe to create an innovative training, up-skilling, and innovation hub for several of the critical infrastructure utilities as defined by the U.S. Department of Homeland Security," says Rich DiClaudio, president and CEO of the Energy Innovation Center Institute. "There really isn't a place where new recruits or entry level skilled workers can be trained and onboarded, or current workers can get additional training and up-skilling. We needed to develop a live mock training facility and a place where new technologies and systems that are part of the energy transition can all have a home and live together."

The Critical Infrastructure Workforce Academy (CIWA) was founded in 2019 by ACIDC and the EICI. The use of the word critical is literal. In addition to the infrastructure-specific

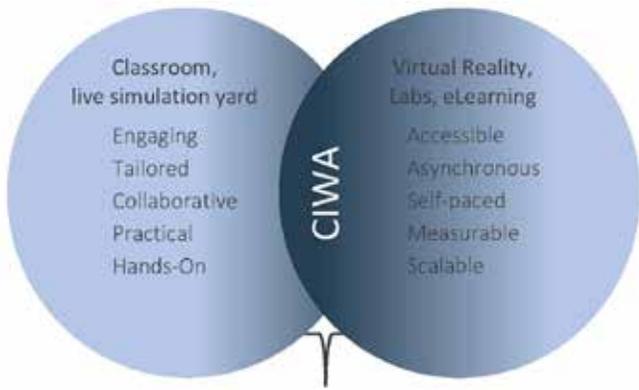
skills training it will provide, CIWA anticipates an increasing need for homeland security, the ability to keep gas, water, sewer, electrical, and telecommunications infrastructure safe and operating without interruption. This winter's storms underscore how quickly disastrous situations can arise when critical infrastructure is disrupted.

The synergy between training and infrastructure includes equipment and software to an increasing extent. CIWA has key partnerships with global manufacturers of critical components, equipment, and systems software. Those manufacturers are keen to have utility and industrial workers obtain and update the skills

needed to operate increasingly more sophisticated systems, most of which are changing constantly and many of which are trending towards remote operation during the rest of the decade. The recent ransomware attack on the Colonial pipeline is but one example of how vulnerable critical infrastructure can be. Technology and equipment developed for the infrastructure systems of the future will lean as much on cybersecurity and resilience as it will on fittings and connections.

After an initial period of providing training and certification from the Energy Innovation Center in the lower Hill District, CIWA plans to move to the first phase of its simulation yard. No specific date exists for the move – CIWA is only getting its first classes underway this year – but Andrew Kauser,





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consulting CEO for CIWA, sees the need for stand alone facilities to develop early.

“It will be a matter of capacity and training required by the partners at the end of the day. Some of the discussions we’re having with the utilities will involve training that is of the nature that does not work well in the EICI because of the physical footprint and the lack of outdoor space,” explains Kauser. “That will be the primary driver. There are companies in the industrial equipment space that would require us to have a physical presence in a place like Northpointe, where not only would we have a classroom and traditional training

infrastructure, but also have outdoor environmental space to perform the hands-on training and field evaluations.”

What makes CIWA unusual is its facilities. Because so much of the critical infrastructure is outdoors and underground, much of CIWA’s training takes place outdoors. Since disabling a portion of the existing critical infrastructure is not a possibility, CIWA will build a simulated “city” on 20 acres, complete with water, sewer, and gas lines, electrical, and telecommunication systems that will mimic those that exist in real towns. A 10,000 square foot multi-functional building will also be constructed at the Indiana University of PA’s Northpointe Business Park campus in southwestern Armstrong County.

The simulation includes residential and commercial “neighborhoods” with utilities, vertically integrated gas operations which include upstream and midstream facilities, and even a train derailment response yard.

Phase two of the simulation yard, which is planned for 2023, will have wind and electric micro grid, water and sewer facilities, and will include the build-out of the Northpointe Technology Center II to create new VR simulation and other classroom and training space. The estimated total cost of the completed simulation yard is north of \$6 million.

“The initial idea was if we could site this facility at Northpointe,

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it would become a destination training facility that would also help with the attraction and development of retail and other commercial facilities to Armstrong County," says Coonley, who left ACIDC at the end of May. "I will continue to help in some capacity with grant-writing and fundraising, and act as an intermediary between the counties and CIWA. I think this could be a significant economic development opportunity for the region."

Thus far CIWA has attracted 15 training providers and 25 industry partners. CIWA is supported by the utility, energy, and related construction industries as a means of improving both public and worker safety, attraction and training of a new workforce, the retraining and upskilling of both displaced and incumbent workers, and the advancement of the energy sector research. In June, CIWA consummated an agreement with Peoples Gas Company to provide training for its workers, and a similar agreement with Columbia Gas is being negotiated.

Public sector support has included funding from Armstrong County and a \$750,000 grant from the Pennsylvania Redevelopment Assistance Capital Program. In October 2020, the Appalachian Regional Commission awarded a \$750,000 grant to the county for CIWA.

The funding allowed CIWA to produce a curriculum and bring

on key staff like Kauser, who has grown two companies that have provided skill-based training for companies around the world, including energy companies in the Middle East. He is also chairman the board of the International Accreditors for Continuing Education and Training. Paul Metro, CIWA technical advisor, worked for more than 30 years for the Pennsylvania Public Utility Commission. His responsibilities included overseeing all the training programs certified for the utilities.

CIWA's model of training in a simulated outdoor or industrial facility, which will be backed up with VR and technology support, is one that the founders hope to reproduce throughout the U.S. For the time being they plan to use the unique CIWA campus as an economic development magnet. With a portion of the workers in training coming from outside the Pittsburgh region, CIWA's founders anticipate demand for a hotel, restaurants, and other amenities.

"One of our region's critical needs moving forward is modernizing and building new infrastructure. At Peoples Gas and Essential Utilities, this is a core responsibility that we embrace and having a workforce that is trained and experienced is a critical component of performing this work safely," says Michael Huwar, president of Peoples Gas. "Unique workforce development programs, like CIWA, are vital to the success of the region and we are proud to be a partner. 

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BEST PRACTICE

TUNE UP YOUR BUILDING: A POST-COVID OPPORTUNITY TO SAVE ENERGY AND MONEY

BY CHRIS M. MARTIN, JR., PE,

COVID-19 sent people running from buildings. As the pandemic spread, people sheltered and sequestered in their homes, leaving offices, classrooms, and retail facilities nearly empty. For a year.

But now that we are entering a post-pandemic world, property owners and facilities managers have a unique opportunity to reimagine how their buildings operate and what their tenants need and want. With that in mind, now is an opportune time for building owners to improve their facility's performance, enhance comfort, and initiate sustainable energy solutions. Now is an optimum time to tune up the building.

Maintain Your Building Like You Maintain Your Car

Buildings are like cars; they need tweaks and tune-ups to maintain maximum efficiency. According to the EPA, 30 percent of the energy in commercial and industrial buildings is used inefficiently or unnecessarily. That equates to hundreds or thousands of dollars per month just floating off into thin air. Just imagine if your car's fuel efficiency dropped 30 percent!

As an energy engineer, it has been my experience that building systems are rarely evaluated holistically. Consulting engineers design components, manufacturers install components and maintenance professionals repair the components as needed. But very few people look at the system systematically. Holistically.

Building tune-ups examine building performance as a whole. Just as your mechanic looks under the hood (or into the computer) of your car to diagnose inefficiencies, replace or adjust parts as needed, then test drives to make sure your car performs as expected, tune-up engineers examine your building automation systems (BAS), diagnose the inefficiencies and leverage building analytics to identify system-level issues, correct the issues and then measure the results. In this way a building tune-up differs from what's phrased "retro commissioning," which traditionally only provides an assessment of a building, not delivered solutions. According to David King, CEM, energy manager at Western Carolina University, his experience with retro-commissioning resulted in an informative 30-page report that served as the catalyst for getting "a few things fixed."

The benefits of building tune-ups are significant.

- Improves energy performance that translates into money saved
- Typically pays for itself within two years
- Provides resources to owners with limited maintenance staff

- Identifies potential issues that can be addressed before becoming crisis situations, such as an emergency system shutdown
- Presents opportunities to upgrade and reimagine building performance and energy consumption.

Unlike commissioning, which is completed before the building is occupied, building tune-ups occur when the facility has been in use for months or even years. This is important, because automation systems sometimes produce unexpected results—like air that is too hot or too cold—when a building is occupied.

A Case Study: What One University Did When the Doors Blew Open

Western Carolina University (WCU) is a 600-acre, 12,000-student public university located in Cullowhee, North Carolina. The 160,000 square foot Health and Human Science (HHS) facility at WCU was built and commissioned in 2012 and functioned well for several years. But in 2016, the doors to the building began blowing open, and staying open, which set off the security system. The problem was over-pressurization within the building that occurred every spring and fall.

To solve the issue, King hired McKim & Creed, Inc. to conduct a building tune-up.

"What appealed to us about a building tune-up is that it is more focused on the building automation systems," explained King. "Instead of creating a lengthy report, we said, 'Let's document what we need to do now and what we can get to later'. Our number one goal was to resolve the pressurization issue, but our overarching goal was to improve energy efficiency and improve overall building performance."

More Than You Need is Waste

In general, the HHS building runs from 7:00 AM to 11:00 PM five days a week. The facility contains a physical therapy clinic with hydrotherapy that operates from 8:00 AM to 5:00 PM five days. There is also a cadaver laboratory and campus IT server closets that require 24/7 conditioning. The building has its own dedicated, 600-ton chiller and 10 air handlers. Each air handler includes 40 downstream boxes that mix the air that circulates into the air handling unit with fresh air from outside.

While the initial directive was to resolve the pressurization issue, King said the team pinpointed five additional areas upon which to focus during the tune-up. "These were the easy pickings, the low-hanging fruit," he said.

In all, the building tune-up addressed the following issues:

- Matching space usage to equipment operating schedule
- Adjusting supply fan speed to precisely meet demand
- Adjusting supply temperature to precisely meet demand
- Economizing
- Resolving air pressurization issues
- Optimizing the chiller operation

Matching Space Usage to Equipment Operating Schedule, or Are We Over-Cooling?

Matching space usage to schedule turned out to be a fast fix for energy efficiency.

WCU control technicians checked the thermographic floorplan every morning around 7:00 AM to assess how the building was performing. The floorplan showed that not all spaces within the HHS were utilized from 7:00 AM to 11:00 PM, which indicated that some sections of the building were indeed being over-cooled.

"I was able to put 30-some spaces on a different schedule. And by shutting down our cooling/heating at 10:30 instead of 11:00 each evening, a process called coast-downing,

over the course of a year that ends up being a whole week," said King, who credited Reid Conway, PEM, a senior energy specialist with the North Carolina Energy Office, for the coast-down concept.

"That scheduling saved us \$12,000 a year," explained King. "Let's say you have to hire that out to a controls contractor, and you pay them \$100 per hour. That ends up being a four-hour payback, not four weeks or four months but a four-hour payback. It was a really quick use of our time," he continued.

Adjusting Supply Fan Speed to Precisely Meet the Demand, or What's Driving Our Fan Speed?

WCU operates a web-based browser for the BAS that allowed the tune-up team to look inside the programming logic. "When we checked the set point range for the air handlers, we realized that the initial set point, as well as the minimum and maximum set points, were set at 1 inch of water column. This was keeping the static pressure high even when it wasn't needed," King said.

Together, King and McKim & Creed designed and installed programming that allowed static pressure to vary, thereby providing only enough pressure in the ductwork to operate the system.

"We dropped the set point to one-quarter inch," said King. "This provided the biggest bang for our buck."

Adjusting Supply Temperature to Precisely Meet Demand, or What's Driving Our Cooling?

When the team walked through the building at various times, they noticed it was always cold. When they looked at resetting the discharge air temperature (DAT), they discovered why.

Every few minutes, the BAS causes each of the

Jendoco Construction worked closely with **Desmone Architects** on their new office addition, which in-filled a complicated urban parcel. The addition is two floors of office space along with an internal garage. The steel and concrete structure is wrapped in masonry, metal panels, and glass to provide the majestic exterior with an amazing amount of natural light. There are many different interior finishes including those of a traditional office space, cloud ceilings, cement panel accent walls, and exposed brick of the existing building. The project was a close collaboration between Jendoco Construction and Desmone Architects, reflecting our long history together coupled with our strong relationship.

MBA *MBA Award for Best New Construction under \$10 Million with Desmone Architects' Two Doughboy Square project.*

This **WELL Gold certified project** is the first in Pittsburgh and is a strong statement of quality design, innovation and construction collaboration. This recognition affirms our continued commitment to "Restoring the Past and Building the Future" of Pittsburgh.

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10 air handlers to look at all 40 of its downstream boxes and perform what is called a linear reset. For example, if 40 spaces have no cooling requests, then the cooling setpoint is raised. As the cooling requests increase, the cooling setpoint slowly drops. When the system reaches 10 cooling requests, the setpoint is 55.

“What we discovered was that even if there were no cooling requests, the air handler still operated at 65 degrees, which caused the chiller to operate,” King said. The setting was a standard parameter from the controls contractor that had never been changed to meet HHS’s actual occupant needs. The team changed the setting to create neutral air, meaning that if there were zero requests, the DAT would reset to 70 degrees.

The team also learned that all 10 air handlers had their own IT closet with their own thermostat. These thermostats were set to cool to 70-72 degrees, meaning that each air handler was emitting 55-degree air most of the year just to overcool a few spaces.

“This was overkill,” said King. “These closets had minimal amounts of airflow and the air never shut off. Our cooling was being driven by these IT closets.”

The team consulted with the IT manager, who said that 78-degree temperatures were sufficient for the IT closets. Changing those temperature within the closets enabled WCU to further reduce energy consumption.

“You can have a wonderful design team and a perfectly great commissioning team, but those IT closets aren’t going in until the building is occupied. The commissioning team would not catch something like that. This is an example of why you need to stay on top of your building’s performance year after year, so you can continue to drive your energy usage further and further down,” King explained.

Economizing or Why Not Use Free, Cool, Dry Air Instead of Mechanical Cooling?

Economizing is when an air handling system uses outside air instead of chilled water to cool the building. This can only be done when the air is cooler and drier than the air in the building. When digging into the programming logic the tune-up team discovered that the economizer would work only if three criteria were met: 1) if the outside air was cool enough, 2) if the outside air was dry enough and 3) when there were no zones calling for heating.

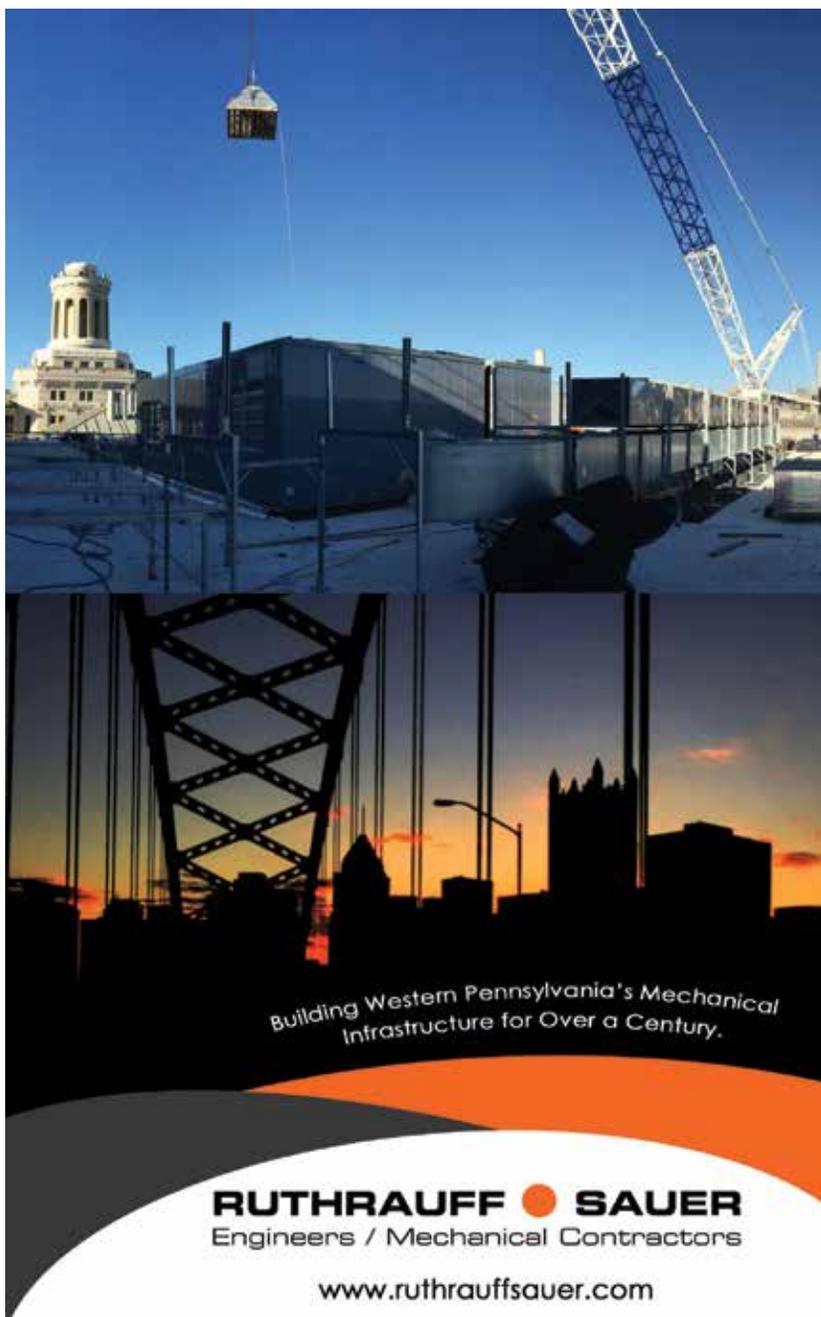
So, if even one of the 40 zones associated with each air handler requested heat, the system would not allow the economizer to work.

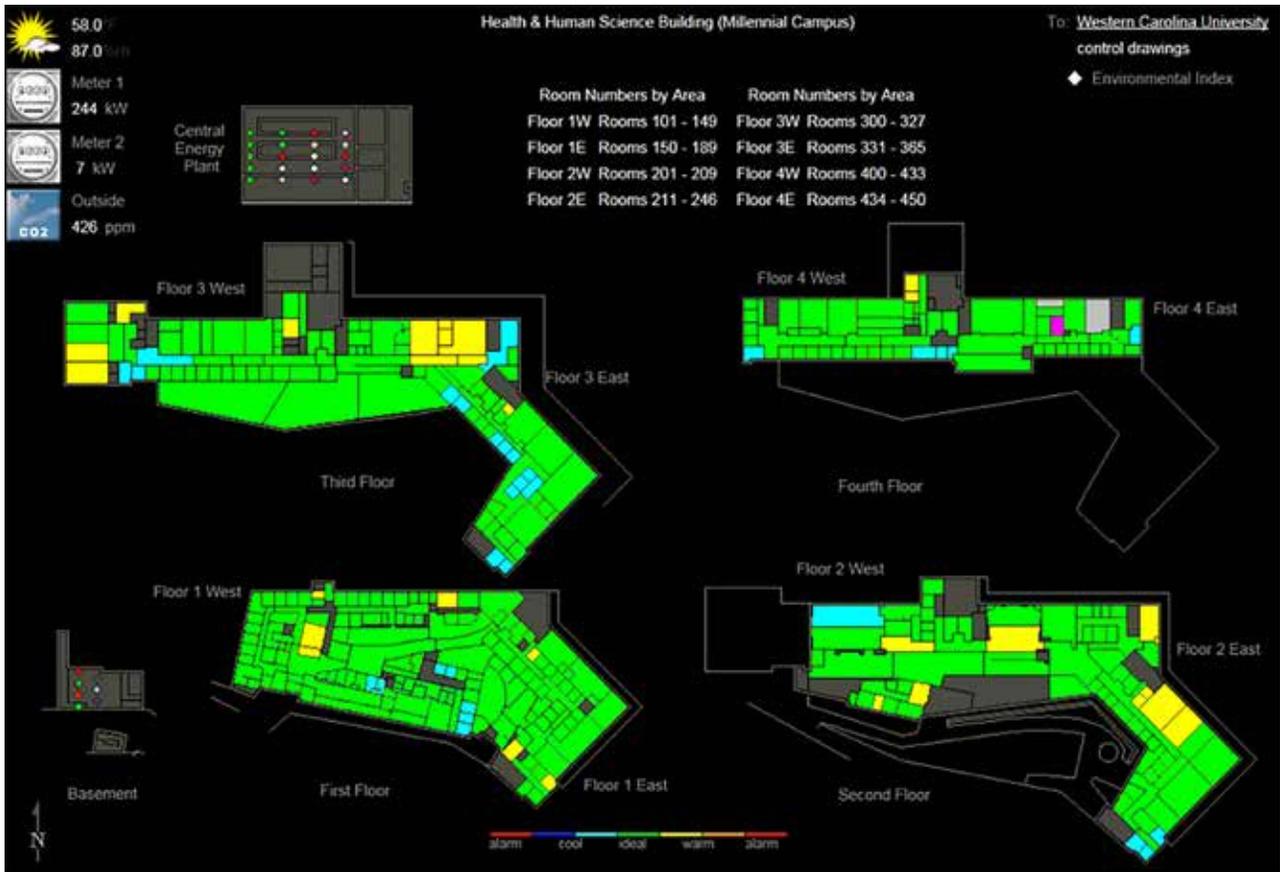
When the team eliminated this criterion, the economizer worked many more hours per year, resulting in less usage of the chiller.

What happens to that zone needing heat? Its own heating coil was required to work harder to heat the space, thus increasing energy consumption for only one space, not the whole building.

Resolving Air Pressurization Issues, or Why Do the Doors Blow Open?

The team found that, when the economizer was in use, the building was not relieving all that excess outside air. This





This thermographic floor plan was a good indicator of how heating and cooling was operating in the HHS building.

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was pushing open the exterior doors and keeping them open. The doors just weren't strong enough to close against that pressure.

The team resolved the issue by adjusting how the relief fan system worked. By altering some of the control setpoints, the relief fans were able to get rid of the outside air before it built up pressure in the building. With that adjustment the doors closed properly during economizer cooling and campus security was much happier.

Optimizing the Chiller Operation, Or Why Does Our Chiller Run Only 30 Minutes?

It's easy to destroy a chiller with excessive starts, and if a chiller runs less than two hours each time it starts, that's excessive. The HHS chiller was running only 30 minutes with each start.

HHS was designed to be one of three buildings on WCU's new Millenium Campus. But when the Great Recession hit, only the HHS building was built. The 600-ton chiller, however, was sized for three buildings. After consulting with the manufacturer, the team adjusted the chiller's demand limit, which controls how hard a chiller works during a cooldown period.

"We've increased run times from 30 minutes to one hour,

20 minutes. While we still have not reached the optimal run time of two hours, we have reduced energy by 30 percent and reduced starts by 77 percent," according to King.

Overall Results of Tune-Up

"Just from the building tune-up we dropped usage by 15 percent, a savings of 400,000 kilowatt hours. It takes a pound of coal to generate 1 kWh, so that's 400,000 pounds of coal as well. It would require an investment for \$250,000 in solar to generate what we saved. The cost of this project was about 1/10 of that. If you look at the 20-year life cycle—just the net cash flow—you end up at Year 20 at about a positive \$700,000," King concluded.

A post-pandemic world offers the perfect opportunity to tune up your building's systems and operations as people return to offices, classrooms and retail shops. It's your chance to reimagine—and implement—your facility's new normal. **BG**

Chris Martin oversees energy optimization and building tune-up services as regional manager for McKim & Creed, Inc. He can be contacted at cmartin1@mckimcreed.com



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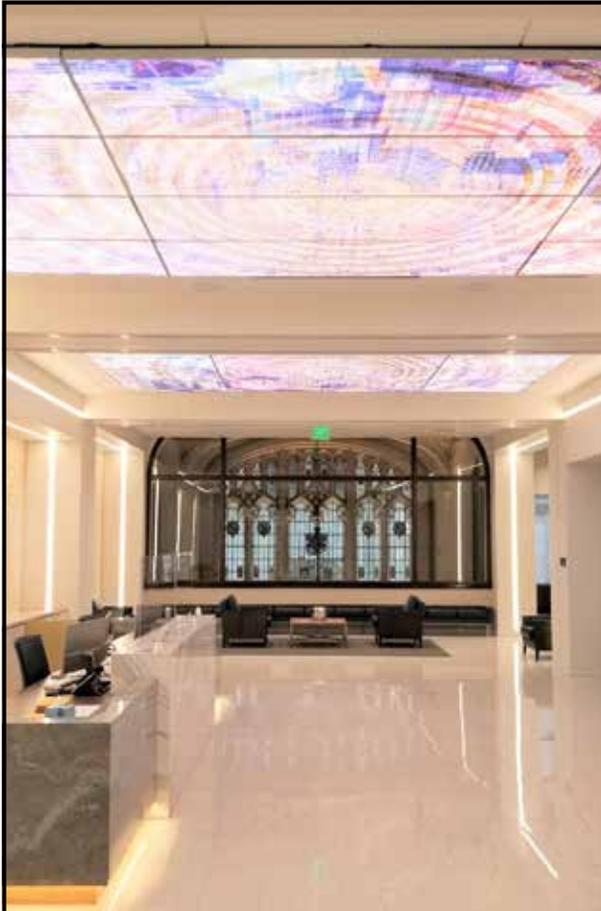
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INDUSTRY & COMMUNITY NEWS



(From left) McKamish's Gary Haffeley, Kevin McKamish, Naley McKamish, and Reilly Jordan at the MBA Young Constructors golf outing on May 17.



(From left) Mike Clements, Andrew Stefko, Ryan Cole, and Matt Dean from Massaro Corporation.



(From left) DeWalt's Jason Post, James Dudit from Karpinski Engineering, Eric Figan from DeWalt, and the MBA's Eric Starkowicz.



(From left) Dom Matarazzo and Lauren Kubeja from PJ Dick, Brooke Waterkotte from Easley & Rivers, and PJ Dick's Selma Voljevica.

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John Wattick (Mosites Construction (left) with Rycon's Kevin Shaffer.



Elizabeth Martini with her father, Angelo Martini, Jr. at the ASA Networking Event.



(From left) Beth Cheberenchick from Facility Support Service, Abby Krehl from Turner Construction and FSS's Tammy DeMarco.

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Justin Jones (left) from PJ Dick and DFL's Jim Malloy.



(From left) Danielle Harshman from the Ironworkers Employers Association, the Carpenters' Jesse DeMino, MBA's Dave Daquelente, and Dave Meuschke from Burchick Construction.



Members of the Massaro Construction Group team assisted AHN with vaccinations at Pictured from left are Jeff Ivanco, Dave Manella, Brad Ridgeway, David Massaro, AHN's Imran Qadeer, and Mike Idzjotic.

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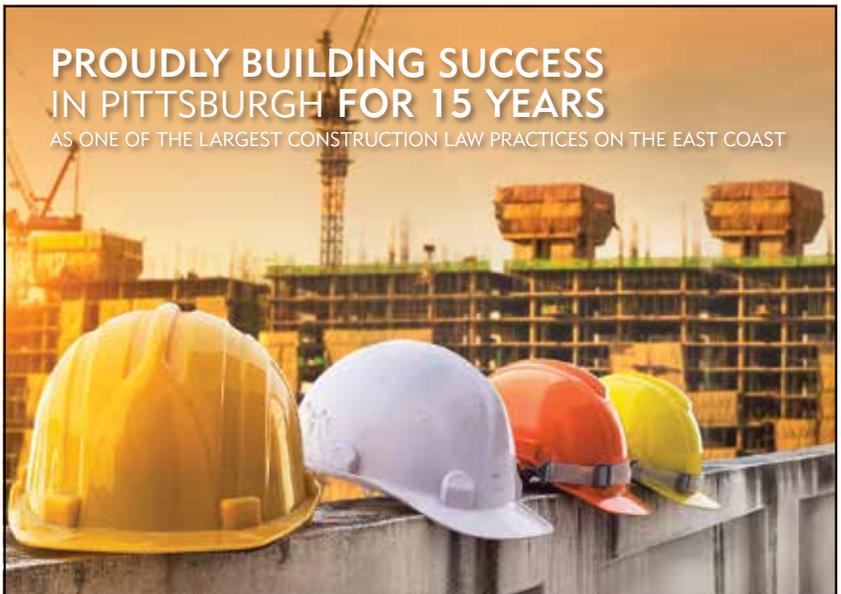


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(From left) PJ Dick's Eric Pascucci, Strada's Al Cuteri, Jim Ferry from Ferry Electric, and LG Realty's Brian Gumberg at the PBX Clays Shoot.



(From left) John Paul Busse, Marthinsen & Salvitti's Bill Sullivan, Kurt Fernsler from Burns White, and Lance Shreffler from Gregori Construction.



(From left) Michael Klein from Blumling & Gusky, Kim Harkobusic from Liberty Insurance Agency, Scott Monit from Brown Dog Signs, and Rycon's John Sabatos at the NAIOP golf outing at Fox Chapel Golf Club on June 7.

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PJ Dick's Brett Pitcairn (left) and John Robinson at the NAIOP outing.



Representing the MBA at the June PBX golf outing were (from left) Lance Harrell, Dave Daquelente, Ohio Valley Construction Employers Council Executive Director Eric Starkowicz, and Bob McCall. Photo by Corkboard Concepts.



(From left) John Latsko and Michael Larson-Edwards from A. Martini & Co., and David Noss from RSH Architects. Photo by Corkboard Concepts.

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AWARDS & CONTRACTS

Dick Building Co. was selected as the general contractor for two new GetGo Café and Convenience Store locations. The new GetGo stores will be located in McKees Rocks on Chartiers Avenue and on East Fifth Avenue in McKeesport. The projects were designed by CESO Inc.

F. J. Busse Co. was awarded a contract for the complete renovation of the 25th floor of 1001 Liberty Avenue for Federated Hermes. The 17,000 square foot space was designed by Virginia Weida Design. NEXT Architecture is the architect.

Carnegie Mellon University selected **F. J. Busse Co.** to renovate Psychology 360 in Baker Hall.

Rocky Bleier Construction Group was awarded an \$8.3 million contract by the Veterans Administration for the Chiller Replacement at the VA Medical Center-Erie. The architect/engineer is Harrell Design Group.

Diocese of Greensburg selected **Volpatt Construction** as design/build contractor for the \$2.5 million St. Mary of Czestochowa Church in New Kensington. The architect is Hayes Design Group.

Etna Community Organization awarded a contract to **Volpatt Construction** for general contractor services for its \$2.2 million Etna Center for Community.

Verizon selected **Turner Construction Co.** as construction manager for the \$30 million renovation of its Johnstown central office. The project involves a 17,860 square foot addition of equipment space including a loading dock with adjoining secure storage and a replacement electric service room. The architect is Bell/Knott & Associates.

Turner Construction started construction on the 11,000 square foot BlueSphere Bio expansion on the fifth floor of The Riviera. The \$3 million office and lab buildout was designed by BCJ Architects.

UPMC awarded **Turner Construction** the contract for the \$2 million UPMC Montefiore Hospital MRI Replacement. IKM Inc. is the architect.

Landau Building Company recently completed an X-Ray Suite at UPMC Shadyside Hospital Physician's Office Building. DRS Architects is the architect.

Landau Building Company is currently performing preconstruction services for the new AHN Forbes Hospital Hospice Room Buildout.

Landau Building Company is the general contractor for the Chase Bank located in Market Square in downtown Pittsburgh, PA. The project is a 3,407 square foot interior renovation. A completion date of October 2021 is anticipated. David Allen Youse is the architect.

Landau Building Company has begun renovations of the CMU Osher at Cyert Hall project. This 5,730 square foot tenant space will be transformed into classrooms, lounge, conference room, offices, and an activity space. The project will be substantially complete by September 2021 and was designed by NEXT Architecture.

Marks-Landau Construction is the general contractor for the Mon Health Medical Center Echocardiogram renovation in Morgantown, WV. This 715 square foot project includes three echo rooms. Construction began in May and will be substantially complete in June 2021.

Duquesne University awarded **Rycon's** Building Group a GMP contract to build their six-story, 80,000 square foot College of Osteopathic Medicine (COM) facility. Planned to open in 2024, this \$36.4 million project will be Duquesne's first new College in more than 20 years. SLAM Collaborative and WTW Architects are the architects.

In Manchester, CT, **Rycon's** Building Group is the construction manager responsible for converting a former furniture store and fitness center into a new \$5.3 million, 55,000 square foot single-story Dick's Sporting Goods for Owner Winstanley Construction Management.

In Kittanning, PA, **Rycon's** Building Group was awarded a negotiated guaranteed maximum price (GMP) contract to provide preconstruction and construction management services to modernize the medical oncology program at the Armstrong Center for Medicine & Health. The \$6.6 million project includes a 15,500 square foot renovation and 1,500 square foot addition.

Rycon's Building Group is the construction manager continuing work at Jameson Hospital in New Castle, PA. Underway is a phase dedicated to 5kV electrical distribution. Since 2017, Rycon has been renovating the 150,000 square foot occupied 90-year-old hospital.

A GMP contract to renovate Children's Hospital Heart Institute was awarded to **Rycon's** Building Group. The multi-phased project will include upgrades to the existing cath labs, creation of a Heart Institute Center of Excellence, the addition of CMR and Lymphatic Program, and a prep/recovery area for continuum care of cardiac patients.

Rycon's Special Projects Group is the design-builder responsible for a \$3.2 million, 17,900 square foot office and water treatment lab fit-out within a newly constructed tech-flex structure for Evoqua Water Technologies. Along with Evoqua, Jones Lang LaSalle is the owner, and RIDC Tech Forge is the landlord. Rycon is partnered with R3A Architecture and H.F. Lenz on the accelerated design.

In Robinson Twp., PA, **Rycon's** Special Projects Group was awarded a \$2.1 million contract to construct a new 3,300 square foot Chase Bank.

Rycon's Special Projects Group will soon begin renovations to a 1,200 square foot Starbucks on McKnight Road in Ross Twp., PA. To date, Rycon has completed 49 Starbucks related projects throughout eleven states and Washington, DC.

Rycon's Special Projects Group was selected to fit-out a variety of projects within the newly repurposed historic Strip District Terminal. Work has included a 5,700 square foot golf simulator space, a 1,900 square foot high-end nail spa, a 6,100 square foot exercise/gym venue, and most recently a white box for a future retail tenant.

In Spokane, WA, **Rycon** is responsible for a 14,000 square foot expansion as well as renovations to an Audi and Volkswagen dealership for repeat client AutoNation. The \$3.1 million project is being completed in two phases to allow for the business to remain fully operational.

Work is underway by **Rycon** on a 4,800 square foot Jason's Deli restaurant in Charlotte, NC. This is the second Jason's Deli location that Rycon has been selected to work on for the repeat client.

In Morrow, GA, **Rycon** was awarded a \$1.7 million lump sum contract to build a new 26,000 square foot two-story storage

building for Life Storage. The structure will hold 168 climate-controlled units.

SITE Centers is the owner, Onyx Creative is the architect, and **Rycon** is the general contractor responsible for converting a former T.J. Maxx into a new 29,000 square foot Burlington in Walker, MI. This \$1.9 million retail store will be completed on a fast-track schedule.

Hilco Redevelopment Partners awarded a \$11.4 million GMP contract to **Rycon** to build a new 174,000 square foot warehouse in Medley, FL, located just outside Miami. The project will utilize the tilt-wall building technique to accelerate construction.

In Dresher, PA, **Rycon** is responsible for the fit-out of a Carbon Health Primary & Urgent Care. The 2,500 square foot facility will feature urgent care rooms, lab, and a primary care space. The owner is Jones Lang LaSalle, and the architect is Pieper O'Brien Herr.

DiMarco Construction was awarded a \$1.17 million general construction contract by South Allegheny School District for the new \$2 million athletic building at South Allegheny Stadium in Liberty Borough. The architect is Eckles Architecture and Engineering.

Carnegie Mellon University selected **Jendoco Construction** to manage the renovations of the former Henry and Elsie



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Hillman residence in Morewood Heights to serve as the home of Carnegie Mellon presidents and special event center.

PJ Dick Inc. was selected by RIDC to construct the third phase of the infill development at Mill 19 at Hazelwood Green. The \$17 million, 100,000 square foot new building will be constructed within the former Jones & Laughlin Steel Mill 19 superstructure. MSR Architecture is the architect.

PJ Dick is the construction manager for the new \$16 million, 600-car parking garage for the Urban Redevelopment Authority at the Pittsburgh Technology Center. The architect is Indovina Associates Architects.

AM Higley Company was awarded a \$15.8 million contract issued in June 2021 for two 50,000 square foot aircraft hangars and associated office support spaces at the North Central West Virginia Airport in Bridgeport, WV. The designer is Thrasher Engineering. Construction will start in July of this year.

UPMC awarded **AM Higley** a contract for the UPMC McKeesport Nuclear Camera project. The architect is The Design Group. The project includes interior renovation of the nuclear camera room and associated MEP systems to enable replacement of the camera.

AM Higley was awarded a design/build project for Allegheny Health Network's Allegheny Clinic Lab and X-Ray relocation project in New Kensington. The design/build partnership is

with RMCreative and FMRW Engineering and involves the build-out of a 4,000 square foot lab and imaging center.

Allegheny Health Network awarded **AM Higley** a design/build contract for AHN's AlphaLab Health project in Bellevue. The 4,000 square foot interior renovation of former hospital space includes construction of four labs and lab support spaces. The design/build team includes architects Hayes Design Group and engineering by McKim & Creed.

AM Higley formed a joint venture with Imbue Technologies, Inc. (ImbuTec) dubbed the ImbuTec-Higley JV. The joint venture was awarded the \$17 million design/build contract to complete IT infrastructure upgrades at eight Allegheny Health Network facilities across Western PA. The design/build partners include Design Group, McKim & Creed, RMCreative, FMRW Engineering, and CJL.

UPMC selected **A. Martini & Co.** as general contractor for its \$1.8 million UPMC Passavant Cranberry Cancer Center renovation in Cranberry Township.

Hill Community Development Corporation is working with **A. Martini & Co.** as construction manager for its \$25 million New Granada Theater and Square redevelopment. The project includes 33,000 square feet of re-use of the Granada Theater and 40,000 square foot new office/mixed-use construction.

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FACES & NEW PLACES

The **Master Builders' Association of Western Pennsylvania, Inc.** (MBA) and the **Construction Advancement Program of Western Pennsylvania** (CAP) welcomed **Lance Harrell** as director of workforce development and diversity, equity, and inclusion. Harrell is a graduate of Point Park University and comes to the MBA from the Hill Community Development Corporation, where he was responsible for implementing the Community Collaboration and Implementation Plan goals on the redevelopment of the 28 acres historic Lower Hill site. He serves as a mentor with Big Brothers Big Sisters of America and as a board member for Operation Better Block, Young Preservationists Association in Pittsburgh, and Sheraden Housing Advisory Committee/URA

RBVetCo, LLC d/b/a **Rocky Bleier Construction Group** announced the promotion of **James M. Kephart** to director of construction operations. Kephart, a former Army combat engineer and Purple Heart recipient, is a service-disabled veteran with over 26 years' experience as a superintendent, project manager and project executive in the construction industry.

Dick Brant joined **Volpatt Construction** as superintendent.

Landau Building Company hired **Karin Martin** as project engineer. Martin comes to Landau from Robert Morris University where she served as a project planner for 10 years. She has a degree in interior design from the Art Institute of Pittsburgh and has worked as a designer until joining Landau.

Turner Construction Co. announced its summer intern hiring. **Sarah Hacke** is returning for her fourth internship from the University of Pittsburgh. **Justin Higgins** is starting his first internship from Bucknell University. **Madison Mathers** returns for a second internship from Penn State University. **Cindy Nguyen** begins her first internship from the University of Pittsburgh.

Calista Ulmer is a recent recruit from Geneva College. She will be working as a field engineer on the **Turner** Verizon Johnstown project team.

Brian Peglowski, who has been with **Turner** for 19 years, has been promoted to project executive and has taken on an expanded role as Turner's deputy operations manager.

Will Masters, who has been with **Turner** for 19 years has been promoted to project executive.

Shawn Bell has been promoted to project executive. Over his 21 years with **Turner**, Shawn has held a diverse background of roles including estimating engineer, logistics manager, superintendent, SPD manager, business development manager and senior project manager.

Chris DiLorenzo has been promoted to Interiors/Special

Projects Division manager. Chris has 10 years experience with **Turner**. He holds a Masters, Architectural Engineering and a Masters, Business Administration from The Pennsylvania State University.

Tara Connor is taking on a new role for **Turner Pittsburgh** as preconstruction manager – project. Tara has 25 years with Turner, including experience in Estimating and Procurement.

Abby Krehl has been promoted to procurement manager at **Turner Construction**. Abby is a graduate of Penn State University with a degree in Architectural Engineering.

Alex Masters, who has 12 years of local industry experience and relationships, has been promoted to marketing/business development manager at **Turner Construction**. Alex is a graduate of the University of Kentucky with a degree in Marketing and Business Administration.

Kyle Cacurak joins **Rycon's** Special Projects Group as project manager. Kyle brings over 15 years construction experience to the team.

In **Rycon's** Cleveland office, **Frederick Eckhardt** has been hired as project manager. He is a graduate of Bowling Green State University and has over nine years project management experience.

Jonathan Fiedler joins **Rycon's** Philadelphia office as senior project manager. He has over 20 years of project management experience and a degree in Civil Engineering from Temple University.

Rycon welcomes **Chelsea Juschitsch** as assistant project manager within the Special Projects Group. Chelsea is a graduate of Chatham University and brings over five years' experience to the team.

In **Rycon's** accounting department, **Emily Leberfinger** has been hired as staff accountant.

Rycon's Cleveland office welcomes **Amy Meese** as an experienced estimating and accounting administrative assistant.

Kristy Rothermel joins **Rycon's** Philadelphia office as assistant project manager. She earned a master's degree from both East Stroudsburg University of Pennsylvania and Stockton University.

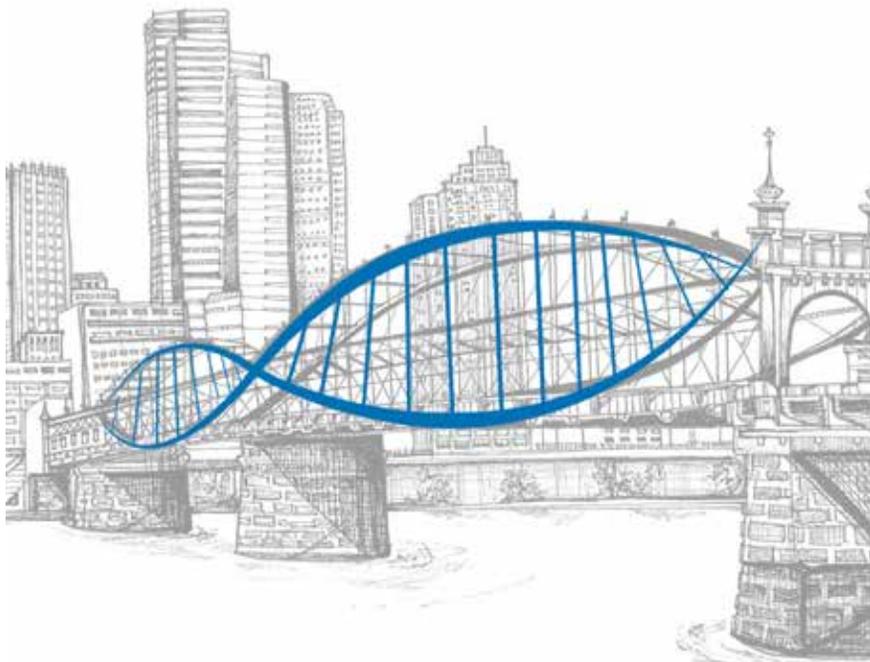
In **Rycon's** Fort Lauderdale office, **Mary Kate Sucre** has been hired as a receptionist.

Paul Yoe has been hired as preconstruction estimator in **Rycon's** Cleveland office. He brings over 38 years' experience to the company.

Kevin Crough, Senior Vice President of Preconstruction, at **Rycon** retired on Friday, April 30.



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Rycon welcomes five interns for the summer. In the human resources department, **Allison Earley** is pursuing a bachelor's degree in business administration from West Virginia University while in the safety department, **Adam Wenger** is attending Slippery Rock University to earn a degree in safety management. Within the marketing department, **Hanna Bernett** is pursuing a bachelor's degree in marketing from Penn State University. Joining the Building Group is **Dewayne Hopewell** who is earning a degree at Indiana University of Pennsylvania, and **Anastasia Romanchik** who is pursuing a degree at Slippery Rock University.

On May 3, **Dan Ieraci** joined **Mascaro** as a steel quality control engineer, bringing 39 years of overseeing quality control activities for the bridge, power, piping and nuclear industries.

Zach Michak was hired by **Mascaro** as a project engineer on May 3. He is a 2019 civil engineering graduate from the University of Pittsburgh.

Joe Taylor, senior health safety and environmental manager at the Carolina Panthers Rock Hill Development, joined **Mascaro** on May 11. As an Army veteran, Joe has 26 years of military experience and leadership in organizational safety, training, fleet management and readiness.

On June 2, **Brett Bowen** started as a project engineer at **Mascaro**. He is a graduate from Gannon University and will be supporting efforts related to the Carolina Panthers Rock Hill Development.

Isaac Harvey, a 2019 construction management graduate from Kent State University, joined **Mascaro** as a project engineer on June 2.

Bringing 20 years of experience in the industry, **Frank Bilek** joined **Mascaro** as a superintendent. Starting on June 2, he will be supporting project efforts related to the Carolina Panthers Rock Hill Development.

Jayna Fittipaldo recently graduated with a concentration in construction management from the University of Illinois at Urbana – Champaign. Jayna became a full-time project engineer on June 2 after interning with **Mascaro** in the summer and winter of 2020.

On June 14, **Deb Saus** joined **Mascaro** as a marketing manager with an expansive background in all facets of marketing, to include TV, digital, print, social media, and events. Her previous roles include ten years as a marketing manager at Berkshire Hathaway, in addition to 12 years as a graphic designer for both WQED & KDKA-TV Pittsburgh.

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Zach Brandy is a 2018 graduate of Indiana University of PA with a Bachelor of Science in Safety, Health & Environmental Applied Sciences. Joining the **Mascaro** team on June 14, he brings three years of experience in heavy/highway, manufacturing, oil and gas, and refineries.

Krystal Wessel joined **AM Higley Company** as senior project engineer. Krystal has four years of construction experience in Pittsburgh and holds degrees in architecture and construction management.

On June 24, 2021, **Burchick Construction Company, Inc.** celebrated the 30th anniversary of its incorporation. The full-service general contracting company was founded by **Joseph E. Burchick**, the firm's president and past president of the Master Builders' Association of Western PA.

Massaro Construction Management Services and Massaro Restoration hired **Jim Little** to serve as business development associate. Jim has been in business management and sales since graduating from the University of Pittsburgh-Greensburg in 2009.

Brad Ridgeway joined **Massaro Corporation** as a project manager assigned to the Erie market. Brad graduated from the University of Akron with a BS in Construction Technology, an AS in Surveying and Construction Technology, and Fire Protection Technology.

Clark Helm joined **Massaro** as a preconstruction manager in May. He graduated from Virginia Polytechnic Institute and State University with a Bachelor of Science in Civil Engineering.

Carmen Melocchi joins **PJ Dick** as a project engineer at the Carnegie Mellon University Scaife Hall project. Carmen graduated from The Pennsylvania State University with a degree in civil engineering.

Susie Slater brings 13 years of construction industry experience to **PJ Dick** as project manager working at the Terminal Modernization Program at the Pittsburgh International Airport. Susie received her bachelor's degree in civil engineering from Syracuse University and her master's in Structural Engineering from University of California, San Diego.

PJ Dick hired 12 new interns for the summer, including **Emily Brown** and **Kelton Embree** from Kent State; **Drishika Dugar**, Carnegie Mellon; **Scott Graves**, Tuskegee Institute; **Michael Kisner**, Garfield Jubilee YouthBuild; **Gavin McKelvey**, Williamson College of the Trades; **Sophia Melocchi**, **Andrew Miller**, and **Naomi Were**, Penn State; **Ernest Sculli**, Drexel University; **Nicholas Stoicovy**, West Virginia University; and **Chris Zangus**, Virginia Tech.



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CLOSING OUT

UNDERSTAND THE WHOLE ENERGY PICTURE TO AVOID POLICIES OF UNINTENDED CONSEQUENCES

BY JAMIE WHITE, PE

A recent storm earlier this week caused the power at my son's house, where I was staying, to be out for over 14 hours. During the polar vortex of 2019, I spent three days keeping a home without electric power warm enough so the pipes would not freeze. As Joni Mitchell sang, "...you don't know what you've got 'til it's gone."

I am blessed to have friends and resources so that events like these are an annoyance. Unfortunately, for too many people, loss of energy can lead to serious health issues and even death. The power outage earlier this year in Texas has death estimates as high as 700. How is that possible when Texas is a world leader in energy production and energy exporter? California continues to have rolling blackouts during high temperatures when energy is most critical. Virtually every part of the United States has significant pockets of power insecurity due to economic pressures and failing energy infrastructure.

Reduction of greenhouse gas emissions is driving public policy and many decisions regarding energy infrastructure. Many states are trying to reduce carbon emissions by limiting development and distribution of carbon-based fuels. They believe stopping both the extraction and distribution of natural gas, oil and coal is the best way to stop climate change. States are, at the same time, promoting energy reduction measures in buildings (LEED, etc.) as well as renewable energy such as solar and wind. On the surface, these ideas make sense. What could go wrong?

As being currently implemented by California and others, however, most of these policies are exacerbating the situation, causing power outages, and slowing the speed of carbon emission reduction. The main reasons are that these policies restrict the most efficient transmission of energy, and they fail to build a bridge between current energy infrastructure realities and future systems.

The regional and national policies demonstrate a lack of understanding of the dynamics of energy transmission and distribution. How much energy is consumed lost in the transmission of various energy types? Some of the policy makers do not seem to understand the vocabulary - MCF gas, therms, kWh, volts, amps, joules, horsepower, etc. - of energy. This is the boring part of energy debates and what those communicating the debates to the public frequently twist.

Let's look at how natural gas can be used to generate electricity as an example of how a basic misunderstanding about the physics of energy causes policies that undermine the goals they intend to achieve.

When natural gas is extracted from a mile below the surface, it reaches a well pad under extreme pressure that pushes the gas through a pipeline system with little or no loss of energy. When gas reaches a home, business, or a power plant, it retains the energy it had at extraction. At the power plant, which is typically 45-to-60 percent efficient, the natural gas loses half its energy during the generation of electricity in the form of waste heat (the big water plumes seen at

power plants). The generated electricity then loses about 30 percent of its energy during transmission across high voltage lines to the homes and businesses. That natural gas-to-electricity process reduced the amount of energy to 35 percent of what was extracted. Energy efficiency measures on site (like those in LEED-certified buildings) would save about 20 percent, or seven percent of the energy that was extracted from the ground.

An alternative is to distribute natural gas to a customer directly to convert it to electricity at their site. There would still be the loss of one half the energy of the gas during the generation of electricity, but the customer can also use the waste heat from the generators to replace energy that would have to be used otherwise to heat buildings, domestic hot water, humidify or de-humidify, or sterilize. This waste heat captures about half the energy lost, so this alternative results in 75 percent – not 35 percent – of the extracted energy being used. That reduces carbon emissions 50 percent and doubles the impact of energy efficiency measures on site.

You may recognize the alternative is a micro-grid and co-generation plant. These systems result in significantly less carbon emitted into the atmosphere. They also offer much great degree of reliability when backed up by the electric grid. Why are they not used more? In Pennsylvania, it is because a policy separating generation and distribution undermines the intended goal.

Pennsylvania PUC regulations currently do not allow electrical distributors (Duquesne Light, West Penn, etc.) to provide electrical generation. Generation providers (micro-grid developers) are not permitted to cross property lines with electrical distribution lines. These current regulations limit micro-grid projects to those customers with significant electric loads and property, like Pittsburgh International Airport, major hospitals, and college campuses. Kudos to Christina Cassotis and Rich Fitzgerald for their forward-thinking vision at the Pittsburgh Airport Micro-grid, which has a positive impact on the environment, reducing operating costs, and creating jobs.

Pennsylvania is fortunate to have both the intellectual and natural resources to correct our vulnerabilities with energy infrastructure. Pittsburgh has the knowledge to help the U.S. and the world bridge the gap in energy development in such a way that the most vulnerable among us do not have extended power outages as we move towards carbon reduction measures. We need to leverage those resources to great jobs and growth in our region.

Jamie White is president of LLI Engineering and the current president of NAIOP Pittsburgh.



Jamie White

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