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Lessons from the Coal Industry Transition

By Erik R. Pages

REGIONAL ECONOMIC ADJUSTMENT IN THE 21ST CENTURY ECONOMY

Coal is in the news today, as concerns about the future of coal-dependent regions became an important issue in the 2016 Presidential campaign. Coal-dependent communities face major economic challenges. They must retrain displaced workers and develop new economic engines, while at the same time coping with a complex mix of other challenges related to health care, talent development, and environmental contamination. Economic developers and community leaders in Appalachia and in other coal-impacted regions are developing innovative new approaches that are relevant for any region in the midst of economic transformations. This experience also offers insights on how to improve the US's overall capacities to help workers retrain and retool, and to aid communities in responding to major economic shocks.

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COAL INDUSTRY TRANSITION

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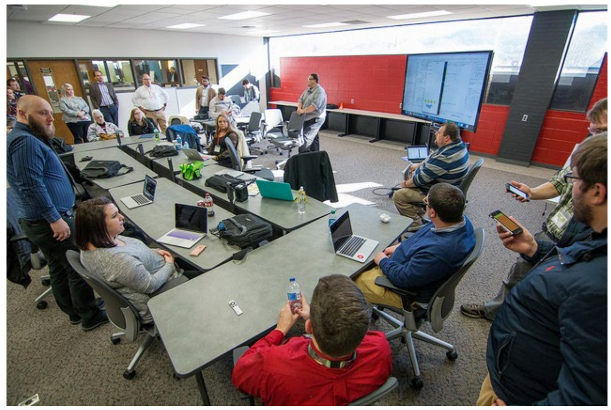
Coal built America. Since the 1800s, coal has driven America's economic growth, sparking the Industrial Revolution, the growth of the steel and auto industries, and even fueling today's information technology economy. But, coal is no longer king. A variety of market and technological forces have combined to reduce the demand for coal, creating major challenges for communities long focused on mining, using, and transporting coal. The development of the coal industry has occurred over a period of more than 150 years. As such, recovery and rebirth are not occurring overnight. The economic transition has been and is painful. Yet rays of hope are also emerging. This article examines how these communities are faring. How are they dealing with the coal industry's downturn? How are affected workers and businesses responding?



Source: Eastern Kentucky Concentrated Employment Program

Displaced coal miners train for new information technology jobs in Hazard, KY.

This article covers several key areas. We first examine the extent of the coal downturn, focusing on its direct effects on coal mining while also assessing ripple effects in sectors like manufacturing and transportation. We then turn to a review of how regions are responding. What programs and initiatives seem to be working? Finally, we look forward to assess lessons learned from the coal transition. How can current efforts help inform economic adjustment efforts more broadly. What can coal communities teach other regions facing their own unique economic dislocations?

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THE COAL DOWNTURN

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Erik R. Pages is president and founder of EntreWorks Consulting (www.entreworks.net), an economic development consulting and policy development firm focused on helping communities and organizations achieve their entrepreneurial potential. Since its founding, EntreWorks has worked with communities in more than 40 states, including extensive work in Appalachia and other coal-impacted regions.

He previously served as policy director for the National Commission on Entrepreneurship (NCOE). Dr. Pages has also held senior positions at the U.S. Department of Commerce's Economic Development Administration and on Capitol Hill. He can be reached at epages@entreworks.net.

REGIONAL ECONOMIC ADJUSTMENT IN THE 21ST CENTURY ECONOMY

Coal is in the news today, as concerns about the future of coal-dependent regions became an important issue in the 2016 Presidential campaign. Coal-dependent communities face major economic challenges. They must retrain displaced workers and develop new economic engines, while at the same time coping with a complex mix of other challenges related to health care, talent development, and environmental contamination. Economic developers and community leaders in Appalachia and in other coal-impacted regions are developing innovative new approaches that are relevant for any region in the midst of economic transformations. This experience also offers insights on how to improve the US's overall capacities to help workers retrain and retool, and to aid communities in responding to major economic shocks.

workers in 2014 – roughly 0.5 percent of total state employment.

Kentucky is not an outlier. Coal's direct employment footprint is relatively small and it has been shrinking for some time. In fact, the Appalachian coal industry has been shedding jobs since the 1990s – mainly due to mechanization and competition from other coal and energy resources. The more recent downturn is the most severe ever, but it is simply an acceleration of a 20-year trend.

Because this decline in the industry dates back several decades, it is unlikely that the new Trump Administration's embrace of the coal industry will reverse these trends. A slowdown in rate of job loss is likely, but many of the competitive market pressures facing coal, due to lower cost natural gas and tighter overseas environmental regulations, will still be in effect.

Given the relatively small size of the economic impacts, we would hope that the coal community transition would be a manageable challenge. However, a deeper and broader look suggests the challenges are quite serious. The numbers tell one story, but reality on the ground tells another. The coal transition challenge is occurring alongside a whole host of other social, environmental and economic challenges that greatly complicate our ability to help affected workers, businesses, and community. For many coal communities, especially in Appalachia, coal industry jobs were the last "good" local jobs. Nationally, the average annual wage for US coal miners is about $82,000. In West Virginia, average coal mining salaries are nearly $85,000, more than twice the statewide salary average of $39,519. So, when coal miners are displaced, their prospects of finding comparable work at comparable pay are miniscule.

Meanwhile, some coal communities face even bigger challenges – for 1/5 of all US opioid related deaths since 1999. These public health challenges are growing just as the region is facing a whole host of other economic shocks. Retraining or upskilling the local workforce is a challenge when residents are simultaneously dealing with drug issues and a host of other social problems.

Environmental contamination further complicates the economic transition. Various coal mining techniques, especially mountaintop removal, have generated grave environmental consequences for neighboring communities. These towns face problems with water and air pollution, as well as major contamination on abandoned mine lands. Efforts at economic recovery will need to begin with major investments in environmental remediation. The current Federal Abandoned Mine Lands (AML) fund contains a pool of about $2.8 billion and several Congressional proposals, like the Reclaim Act, seek to speed the release of these funds. This could help, but challenges will still remain. The US Office of Surface Mining Reclamation and Enforcement estimates that it has more than $4 billion worth of high-risk abandoned mine sites in its current inventory, and this figure is expected to grow in coming years.

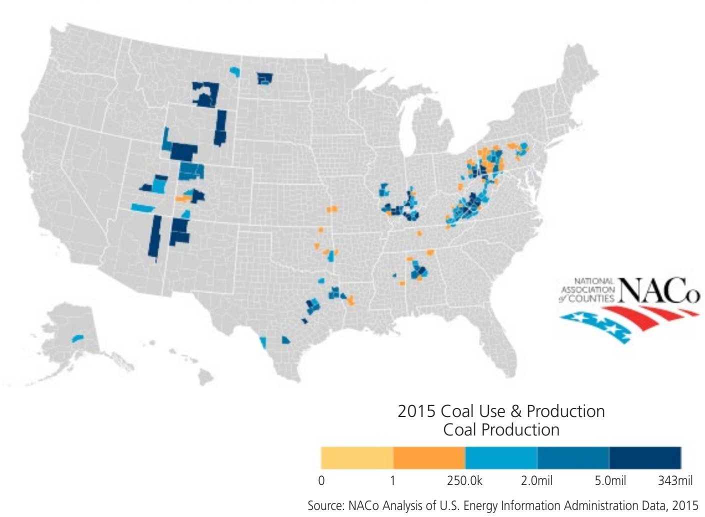
Thus, while the overall economic impacts of the coal transition may seem manageable at first glance, the reality is much more sobering. Coal regions must pursue economic recovery while also coping with an unprecedented mix of other public health, economic, and environmental challenges.

ECONOMIC RIPPLE EFFECTS

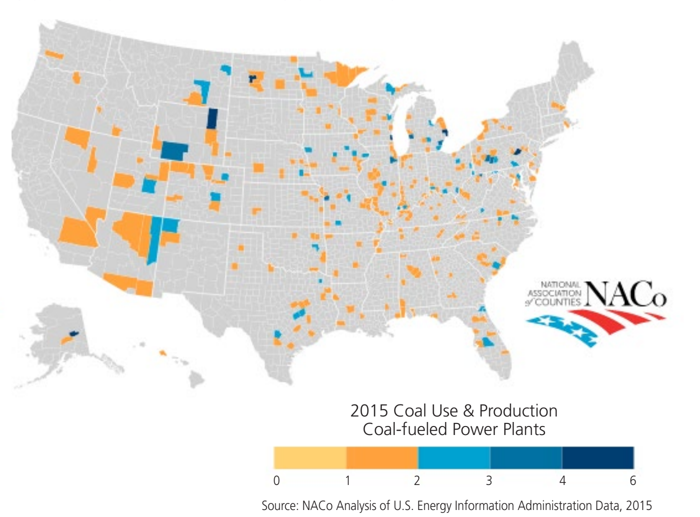
Because of all the problems cited above, most media reports have focused on how *coal mining* communities are faring. Yet, the coal industry means much more than mining. It also involves coal-powered utilities, transportation and logistics, and the many suppliers – especially manufacturers – who provide goods and services to the coal industry. The figure shows regions affected by downturns in either coal mining or coal-based power.

The economic ripple effects linked to coal's decline will be quite significant. After all, the primary use of coal is to drive power generation. Today, coal accounts for 33 percent of US electricity generation (down from 51.7

COAL PRODUCING COUNTIES



COAL POWER PLANT COUNTIES



percent in 2000), and this figure is dropping fast. Coal powered facilities accounted for 80 percent of power plant retirements in 2015. Experts have projected that as many as 379 coal-fired power plants will close between 2012 and 2020.

The shutdown of these power plants is already having big community impacts. Some of the plants are located in rural areas, but a large number are located in dense urban communities. In all locations, the plants provide good jobs and often serve as major taxpayers. Affected towns lose good jobs and a large chunk of revenues for schools and other public services. Cuts in coal production are already affecting many local and state budgets. For example, in 2016, West Virginia faced a $270 million budget shortfall due to major declines in coal severance tax revenues. Finally, most of these plants have generated environmental contamination, so extensive brownfields redevelopment will be required.

Redevelopment is moving slowly if at all. A recent Delta Institute study of closed plants found that the redevelopment process has taken an average of 27 years. As the pace of closures increases, that timeline has to change.

Power plant closures are not the only challenge related to the coal industry downturn. Transportation and logistics related sectors are also hurting, with railroads and port facilities among the hardest hit. For example, Norfolk Southern (-23 percent) and CSX (-19 percent) both reported major losses of coal revenue in 2015. Similarly, the port of Hampton Roads (VA) reported a 30 percent decline in coal exports for the first half of 2016. Coal transport accounts for a large share of rail revenue, so future projections remain gloomy as well.

HOW ARE REGIONS RESPONDING?

The coal industry transition is brutal. Many coal-dependent communities have relied on coal as an economic driver for more than a century. In many regions, coal is the primary provider of good high-paying jobs. The average coal miner can make as much as $75,000-$85,000 per year – nearly three times the average income. The loss of these livelihoods has serious economic, social, and cultural consequences.

Fortunately, miners have many skills that are in high demand if appropriate transition services are in place. A recent Virginia Tech study assessed relevant workforce skills in Southwest Virginia. This analysis found that many coal industry occupations, such as roof bolters and machine operators, require STEM-related skills and competencies that directly translate to high level production positions in growing manufacturing sectors.

New paths to prosperity are being created, but the process takes time. As they develop new strategies, coal-dependent regions must address three sets of issues at one time: 1) Helping coal miners and other workers retrain and find new careers, 2) Identifying and capturing new business and economic growth opportunities, and 3) Addressing larger structural challenges facing their communities. This is a tough juggling act, but, as we'll see below, some good news is emerging.

Source: Appalachian Regional Commission

Virginia Governor Terry McAuliffe and the Appalachian Regional Commission's Earl Gohl test Unmanned Aerial Vehicles (UAVs) at Mountain Empire Community College in Big Stone Gap, VA.

- **Retraining and Reskilling**

When mines and other facilities close, job one is to help miners and displaced workers retrain and find new gainful employment. In many ways, miners face retraining challenges similar to long-tenured manufacturing workers. They have extensive and specialized technical skills, but they may lack needed credentials or may have trouble transferring those skills to new industries.

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Many successful programs help miners transfer these STEM skills to new sectors. Efforts to help miners move from "coal to code" have received loads of media attention. Pikeville, KY's Bit Source, a web development firm, has been the subject of more than a dozen national and global news stories. The success of these IT efforts is a reminder that, even though located in rural areas, many coal-impacted communities do have excellent broadband infrastructure in place.

In Southwest Virginia, regional leaders are hoping to position the area as a center for unmanned aerial vehicle (UAV) testing and research. In 2015, Wise, VA, was the site of the first ever remote drone delivery of pharmaceuticals and medical supplies. More recently, regional leaders have created the Fly Wisely Accelerator Corporation to serve as a regional advocate for UAV development. Finally, Mountain Empire Community College, based in Big Stone Gap, VA, has become the state's first provider of credit-based courses on UAV technologies.

Coal workers are also well-situated to obtain new employment in the growing solar industry. A recent study found that the solar industry could conceivably absorb nearly all of the workers projected to lose jobs in the coal sector. More importantly, the researchers found that technical workers could actually earn more in the solar sector. (In contrast, managerial level workers would earn less.)

• Identifying New Economic Engines

When it comes to community economic adjustment, it's always better to "hit for singles, not home runs." It is likely impossible to find a single replacement for the jobs and revenue provided by the coal industry. Moreover, it may not be a good strategy anyway as dependence on any one single industry is a risky proposition. A more promising approach involves a mix of strategies that nurture and support a diverse set of new economic drivers.

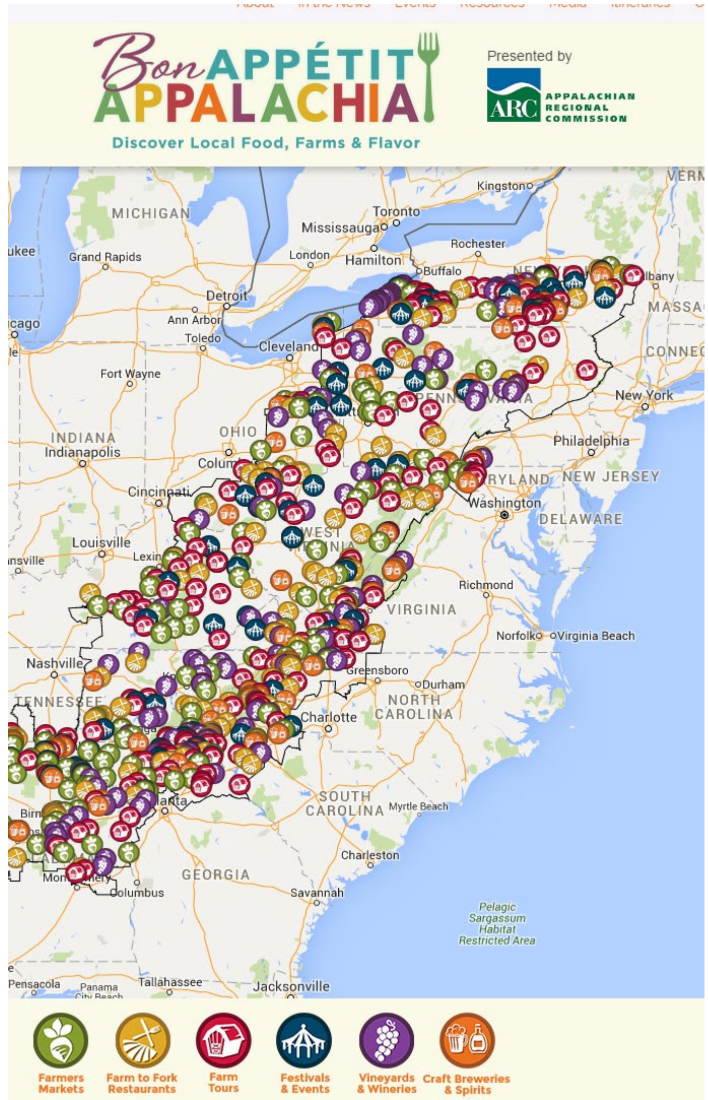
A number of communities are responding to the coal transition challenge by building up their own internal capacities. Many regions had made little or no historical investments in economic development because they had always been able to rely on revenue and jobs from coal. With the loss of these resources, they're now developing new visions for their economic futures. Moffat County in Northwest Colorado is a good example. This small community has a large share of its employment and tax base tied to a local mine and power plant—more than 500 workers in a community of only 9,000 people. The region is now embarking on its first effort to craft a countywide economic diversification strategy.

Each community and region will likely embrace a different mix of economic targets, but some promising ideas are already sprouting up. New approaches to tourism are especially promising, and some interesting models are emerging. Southwest Virginia's Crooked Road trail – following key locations tied to the birth of country music – is gaining lots of attention. Other strategies also seek to link multiple destinations and activities – all as part of an approach to encourage longer visits and create more local business opportunities. Examples include the Trail Towns program (linking Pennsylvania and Maryland towns along the Great Allegheny Passage) and the regional Bon Appetit Appalachia website promoting culinary tourism.

In addition to its work supporting UAVs, Southwest Virginia is also touting its potential as a center for information technology firms and data centers. The region has good broadband infrastructure, ample water, and a secure safe location. It is also home to the University of Virginia at Wise which operates Virginia's only undergraduate software engineering program. The university has also recently inked a partnership with the Mach 37 Cyber Accelerator program to create closer linkages to the technology community in Northern Virginia.

• Addressing Long-Term Challenges

It can be tough to retrain workers and identify new economic engines to replace lost coal jobs. But, that's not the only challenge facing coal dependent regions. Typically, they also face a difficult mix of more long-term structural challenges as well. At the top of the list is the need to develop a skilled and ready workforce. This effort has at least two components – addressing the health of current residents and increasing their skill base.



Bon Appetit Appalachia website, noting Farmers Markets, Farm to Fork Restaurants, Farm Tours, Festivals & Events, Vineyards & Wineries, and Craft Breweries & Spirits.

Many coal-dependent communities are in the midst of a health crisis. The opioid epidemic is centered in Appalachia, as Appalachian states rank at or near the top in terms of overdose deaths and other related health problems. And, more general health challenges of high obesity and diabetes rates and limited access to basic health services, also abound. There are lots of excellent local experiments underway, including a major effort by the Appalachian Funders Network to engage foundations in supporting a culture of health in the region. Other events, such as Somerset Kentucky's 2016 Health Hack-a-Thon, are trying to engage a wider audience of local residents, along with experts from MIT and other researchers, to brainstorm and develop action plans to address the region's drug epidemic and the challenges related to obesity and diabetes.

Workforce development is another core part of economic diversification efforts across America's coal-dependent regions. In nearly all cases, these efforts include investments to help coal miners and related workers find

The Obama Administration's Partnerships for Opportunity and Workforce and Economic Revitalization (POWER) Initiative was first announced in March 2015 as "coordinated multi-agency effort to help workers and communities that have been adversely impacted by changes in the coal industry and power sector." Led by the White House, POWER engages several federal agencies, led by the EDA and the ARC, to make targeted investments to help coal-affected regions support economic diversification efforts. In 2015, these agencies invested $14.5 million in 36 different projects. In 2016, an additional $28 million was invested in 42 projects. POWER projects are a diverse lot and include efforts to promote new industries, such as tourism, UAV development, and agriculture; new infrastructure projects; and workforce training and retraining.

The future of the POWER Initiative under a Trump Administration remains highly uncertain. While the Trump team is likely to be quite supportive of the coal sector, few industry experts expect that this more friendly posture will reverse job losses or foster fundamental shifts in the economics of the coal industry. If this pessimistic prognosis is correct, we can expect some continued support for future investments in economic diversification efforts such as those supported by the POWER Initiative.

new jobs and careers. But, they can and should include a more long-term perspective that seeks to create better career options for all local residents. Many of these efforts have been funded via the Obama Administration's Partnerships for Opportunity and Workforce and Economic Revitalization (POWER) initiative. Most of these POWER projects are just getting underway, but the status of this effort is uncertain under the Trump Administration.

New workforce development investments will help, but coal regions, like much of rural America, may need to think even bigger and consider what they can do to encourage more in-migration. These regions have faced decades of population loss, and a return to prosperity likely requires a reversal of this pattern. Attracting new residents can bring new talent, new skills, new perspectives, and economic growth. For example, recent research shows that immigration is a key factor in determining whether a rural region's economy grew over the past decade.

For this reason, coal-dependent communities should consider combining their ongoing diversification strategies with programs that encourage new residents. The actual policy mix will differ by community but nothing should be off the table. This could include encouraging local settlement of new immigrants, retiree attraction strategies, provision of subsidized housing (for artists or others), and the provision of free or subsidized land. These efforts to support "brain gain" have received a lot of attention in the Great Plains and the Midwest. They deserve similar attention in coal country.

America's coal regions face unique circumstances, but their economic adjustment challenge is quite similar to that facing other American regions such as New England's paper mill communities or regions facing lower revenues from the oil and gas industries. The challenge is not just about coal; it is about making it easier for working people to pursue new careers and economic options in the face of economic dislocations.

LOOKING AHEAD: LESSONS FOR ECONOMIC ADJUSTMENT

Coal communities face a tough transition, but, there is also great cause for hope and optimism. A series of interesting and inspiring experiments are now underway, and their potential for building stronger communities is enormous.

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We need to rethink how we help workers, businesses, and communities as they respond to economic shocks like the coal economy transition. First, we need to provide more generous financial support to help people retrain and pursue new career options.

We may also need to provide financial support, such as tax credits or related training and job search assistance, for relocation. While it may be preferable to help people obtain new jobs and careers close to home, that goal may not always be feasible. In some cases, the best strategy may involve relocating to a new region with better job prospects.

Source: The University of Virginia's College at Wise Opportunity SWVA

Winners of the 2015 My Southwest Virginia Opportunity Cup Business Plan Competition were recognized as some of the region's top entrepreneurs.

Lastly, we may have to consider some form of wage insurance for displaced workers. Many workers fail to take advantage of new training options because they cannot afford the time and expense required to pursue additional education. Short-term wage insurance would provide them with a more substantial basic income, perhaps allowing them to pursue more rigorous retraining options.

Many of these basic ideas already exist – albeit in limited form – in our current Trade Adjustment Assistance (TAA) programs. Yet, as numerous studies show, these programs are grossly underfunded – especially when compared to similar programs in other advanced economies. The economic adjustment challenges now facing the coal industry are not going away, and we can expect similar economic shocks for other sectors as well. If this is the "new normal," we need to prepare for regular economic adjustment in a more serious manner.

While this summary paints a somewhat bleak picture of the state of the coal industry transition, I'm actually heartened by what I've witnessed at the community level. People are coming together and developing new and interesting strategies to rebuild long-neglected communities. The process of change will not be easy, but the current transition offers tremendous opportunities to rebuild communities that have suffered from decades of neglect and disinvestment. These efforts can serve as future models for how to do economic adjustment right.

RESOURCES ON THE COAL TRANSITION

There is a huge amount of literature on the coal economy transition. Here are a few helpful resources:

Appalachian Coal Industry, Power Generation and Supply Chain: This Appalachian Regional Commission-backed study takes a deep look at the wider coal industry supply chain. http://www.arc.gov/assets/research_reports/CoalIndustryPowerGenerationandSupplyChainReport.pdf

Coal Reliant Communities Innovation Challenge: This project, sponsored by the National Association of Counties and the National Association of Development Organizations, provided technical assistance and coaching to 23 coal-reliant regions. The project also developed an excellent clearinghouse on economic diversification and you can also access a brief podcast on lessons learned from the project teams. http://www.naco.org/resources/programs-and-initiatives/coal-reliant-communities-innovation-challenge

Mountain Association for Community Economic Development: Based in Eastern Kentucky, MACED has been a major force in thinking about new directions for Appalachia's economy. Their work on the Appalachian Transition may be of particular interest. On that front, also check out the work of the Central Appalachian Network. http://www.maced.org/

Planning for Montana's Energy Transition: Coal is not just about Appalachia. Many Western states are also affected. This Headwaters Economics report examines the coal transition in Montana. http://headwaterseconomics.org/economic-development/local-studies/montanas-energy-transition

Transforming Coal Plants into Productive Community Assets: This 2014 Delta Institute report analyzes the challenges and opportunities around coal plant reuse. http://delta-institute.org/delta/wp-content/uploads/Coal-Plant-Overview-Report-10-21-14.pdf