



# Infrastructure Status and Needs in Southwestern Pennsylvania

Infrastructure Policy Committee Update of  
September 2011

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# LETTER FROM THE INFRASTRUCTURE POLICY COMMITTEE COCHAIRS

In January 2009, the University of Pittsburgh Institute of Politics produced its first summary document on the status of Southwestern Pennsylvania's infrastructure. We hope to continue to update the document periodically, and this is the fourth such update.

Over the past year, the focus of many Pennsylvanians has been directed at the ongoing exploration of the Marcellus Shale. By now, it's certain that the development of the Marcellus Shale has had and will continue to have a significant impact on all sectors in the region, providing new economic and development opportunities while also complicating and straining existing infrastructure. Water is one of the most prominent sectors affected by this exploration. With an increase in the number of wells being drilled comes an increase in the amount of water that is needed. Additionally, concerns over contamination of our water resources with fracking fluid are at the forefront of the Marcellus conversation. Waterway infrastructure, which already has been suffering from insufficient maintenance, is being taxed even further and is in dire need of rehabilitation. Lastly, sewage authorities, who initially took on frack wastewater for processing, quickly found that they lack the ability to treat the water without some sort of pretreatment.

Pennsylvania roadways also are seeing significant impact from the Marcellus industry. Heavy truck traffic has rapidly increased on roads that cannot withstand the wear and tear being placed on them. Significant increases in road repairs are necessary, some of which are preemptive and are actually helping the Pennsylvania Department of Transportation achieve its maintenance repair schedule; however, generally, the traffic on these roads is creating more paperwork and permitting nightmares. Other sectors, such as telecommunications, electricity, and natural gas, also are forecasting potential opportunities for infrastructure expansion and renewal in order to cater to the influx of industry.

Another challenge relates to funding. In 2009, at the same time that the first of these summary documents was released, the federal \$787 billion American Recovery and Reinvestment Act (ARRA) was implemented. Of that amount, Pennsylvania received more than \$32.6 billion, which was used in a wide range of investments, including transportation infrastructure, other infrastructure, housing, energy independence, the environment, public safety, services for Pennsylvanians, education, and health care. Most of that money was quickly awarded to these programs, and while some of the programs receiving stimulus money will continue to be funded over the next few years, there is no additional stimulus money coming into the state. This means that we must now look for new funding mechanisms to address existing project backlogs, new infrastructure, and the continual demands that are placed on our existing infrastructure.

In addition to finding new funding mechanisms, we also must look at modernizing our current infrastructure and transportation

systems. One way of doing so is by implementing intelligent transportation systems (ITS), which offer many ways to make our transportation system work smarter, with fewer accidents, less congestion, and reduced energy use and without more dollars. ITS enable vehicles, transit riders, roads, traffic lights, and message signs, to name a few, to communicate with each other by utilizing wireless technology. In December 2009, the U.S. Department of Transportation released the ITS Strategic Research Plan, 2010–2014, which outlined the organization's research strategy over the next five years. The department will research vehicle-to-vehicle communications, real-time data capture and management, road weather management, and a variety of other ITS strategies.

In August 2011, the Institute of Politics' Infrastructure Policy Committee and Traffic21, a transportation research initiative of Carnegie Mellon University, hosted a two-day forum dedicated to the topic of ITS. Transforming Transportation: The Role of Intelligent Transportation Systems featured expert speakers from the national, state, and local level who discussed the current state of ITS at all levels of government as well as policy opportunities and challenges that exist around the implementation of ITS. Funding for research and deployment of these systems and a lack of universal policies regarding the implementation of ITS seem to be two major issues that need to be addressed before moving forward. Participants at the forum also were treated to project demonstrations from local researchers exploring practical applications of ITS.

Lastly, green infrastructure and innovative maintenance practices continue to be a high priority in Southwestern Pennsylvania despite the mounting baseline needs in every sector. For many sectors, this reflects growing federal legislation priorities toward utilities efficiency; for others, it reflects a need to reexamine ways to cut costs individually. In some cases, this does not necessarily entail a complete technological overhaul, but rather it means small improvements in design and asset management across and among sectors.

We hope you will continue to find this document useful and appreciate your feedback, whether in the form of compliments, corrections, or suggestions. You may submit them to the Institute of Politics at 412-624-1837 or [iopadmin@pitt.edu](mailto:iopadmin@pitt.edu).

Thank you for your interest in Southwestern Pennsylvania's future and how an effective, coordinated infrastructure can contribute to it.

*Institute of Politics Infrastructure Policy Committee*



*Paul Costa, Cochair  
Member, Pennsylvania  
House of Representatives*



*Patricia L. Kirkpatrick, Cochair  
Commissioner, Armstrong County*

## EXECUTIVE SUMMARY

This University of Pittsburgh Institute of Politics infrastructure status report for Southwestern Pennsylvania explores the following categories and also addresses air transportation, dam safety and flood control, natural gas and electricity, and telecommunications.

The developments in these sectors are crucial to the region's economic and environmental future.

**Roads and Bridges:** Southwestern Pennsylvania's roads and bridges are in a serious state of disrepair, Pennsylvania having the most structurally deficient bridges in the U.S. Priorities have shifted primarily towards simply maintaining existing bridge infrastructure, but the lack of anticipated funding from Act 44 has put enormous strain on PennDOT and SPC's maintenance goals.



**Water and Sewage:** Pennsylvania is characterized by a highly entangled, out of date network of water and wastewater infrastructure managed by hundreds of municipalities and companies. In response to water quality and sewage failures, water authorities are looking towards asset and management consolidation, as well as green infrastructure that controls stormwater at the source.



**Public Transit:** Public transit in Southwestern Pennsylvania has seen a decline in ridership due to the recent economic downturn, and yet a growing public demand for faster, greener service in high-traffic areas. Transit authorities face a funding strain similar to those in the road and bridges sectors, as their funds come from a highly competitive mix of federal and regional sources.



**Marcellus Shale:** Development of the Marcellus Shale play has the potential to bring numerous economic opportunities to the Southwestern Pennsylvania region. Natural gas exploration, drilling, and processing have traditionally affected all infrastructure sectors within a region, particularly the water and wastewater sectors.



**Railways:** Railroads are becoming an increasingly important means of product and passenger transport in Pennsylvania, as people are looking towards more environmentally and economically sound modes of transit. Pennsylvania is considered a national leader in rail infrastructure investment.

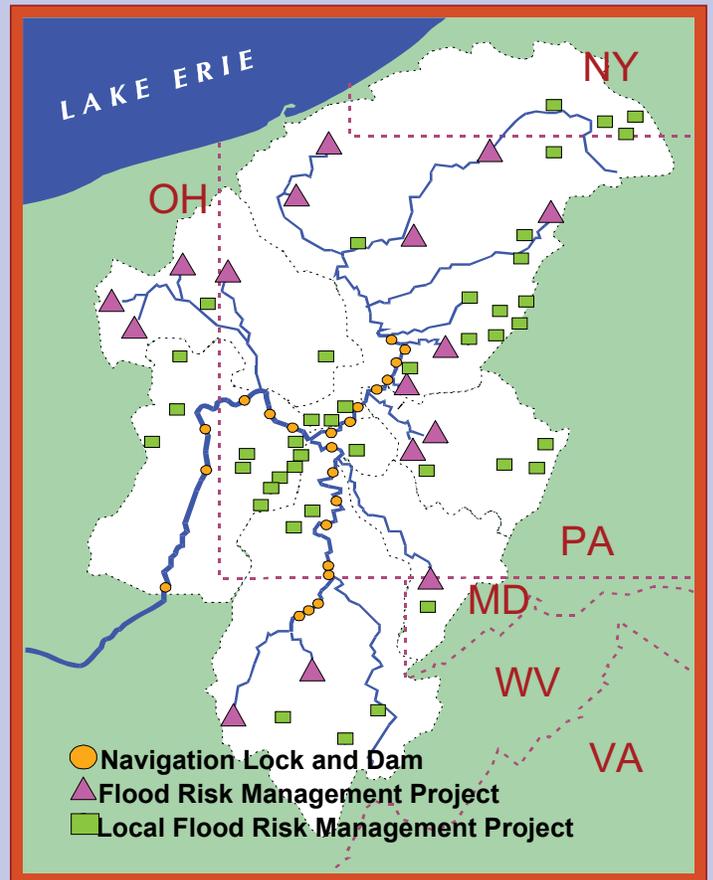


**Navigable Waterways:** Southwestern Pennsylvania's rivers have for many years been a critical artery for manufacturing and production transportation needs. The rising costs to maintain deteriorating lock and dam structures, coupled with the nation's historical preference for roadway transport, have contributed to the critical state of most of Pennsylvania's waterways infrastructure.



## NAVIGABLE WATERWAYS

River transportation is a vital part of Southwestern Pennsylvania's economy; the Port of Pittsburgh is the second busiest inland port in the nation. The Pittsburgh District of the U.S. Army Corps of Engineers operates and maintains 17 lock and dam structures on the three major rivers in Southwestern Pennsylvania as well as six additional structures in Ohio and West Virginia. Most of these structures are 60–80 years old, and many are in a severe state of deterioration. The ongoing lower Monongahela River navigation project was undertaken by the Army Corps of Engineers to repair, remove, or replace locks or dams at Braddock, Elizabeth, and Charleroi, including dams at Braddock and Elizabeth classified as "critically near failure."



### Demand:

- On average, 40 million tons of freight pass through the Port of Pittsburgh each year, 80 percent of which is coal; however, traffic has slowed by about 20 percent due to the recent economic downturn. Due to increased focus on

non-highway-based freight transportation, freight loads are expected to increase in the Ohio River Basin, putting additional strain on an already aged and deteriorating infrastructure.

### Priorities:

- Lower Mon Project: The project was authorized in 1992 at a cost of \$556.4 million on an anticipated 12-year schedule to replace the Braddock Dam and the two Charleroi locks and remove Elizabeth Locks and Dams, all critically failing. The poster child of languishing waterways projects, the project has a completion date that has been pushed back tentatively to 2020 or beyond. In 2009, the project received \$68 million through ARRA, which enabled continued construction of approach and guard walls for the first of the two new chambers. The project completed Braddock Dam replacement in 2004 and is in the process of replacing the first of two locks at Charleroi, with removal of Elizabeth Locks and Dams still on the horizon. The current total cost estimate to complete the project is over \$1 billion. The pool between Elizabeth and Charleroi is one of the most important in the region, with jobs at two power plants and a coke works depending upon navigation for their operation.



- The Upper Ohio Study: The locks and dams at Emsworth, Dashields, and Montgomery in Pennsylvania are the oldest and smallest on the Ohio River. They have structural deficiencies and limit the economic opportunities for efficient river transportation. The cost to improve them would be more than \$2 billion.
- The Allegheny River: Because these were smaller locks, traffic on this river is less than on the others. Unfortunately, that has led to less investment in repairs. The Allegheny has long been on a “fix as fail” repair basis.

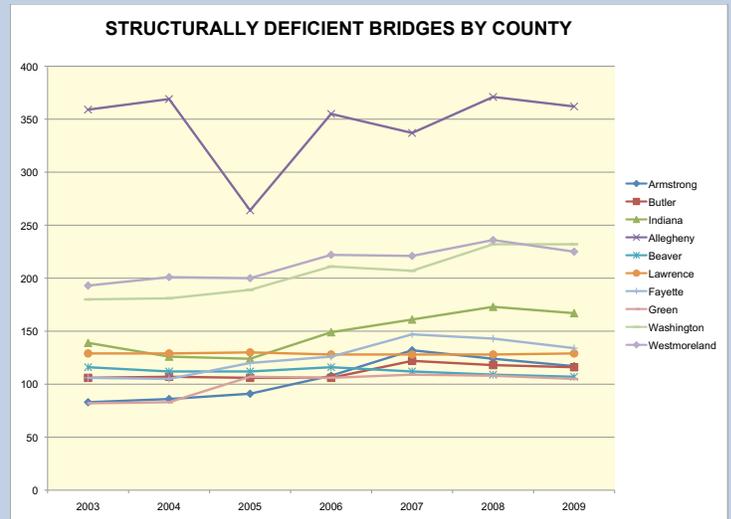
## Funding:

- The federal government provides half of the cost for construction of new or rehabilitated project features, matched by revenues from the Inland Waterways Trust Fund that the towing industry generates through payment of a 20 cent per gallon fuel tax.
  - The Inland Waterways Trust Fund has become severely depleted, causing delays in project construction.
- Waterways infrastructure has been directly impacted by the economic downturn and the current federal deficit. Funding comes from the discretionary portion of the federal budget. Because this portion is only 20 percent of the federal budget, funding is highly volatile.
  - ARRA has provided a total of \$127 million for Southwestern Pennsylvania projects and maintenance, \$93 million of which has already been obligated or expended. Out of 81 total contracts, 74 have been awarded.
- The Obama administration reinstated its lockage fee proposal in the fiscal year 2011 budget proposal to replace the marine diesel tax as a source of revenue for the trust fund. Other options to restore the balance between revenues and needed expenditures from the Inland Waterways Trust Fund are also being developed.
- The Inland Waterways Users Board has proposed an alternative funding stream that would increase the user fee from 20 cents to 26–29 cents per gallon for the commercial towing industry. It would stress completing projects already started in a 20-year capital improvement plan, with priorities of dam safety, condition assessment, and economic return. It would shift 100 percent of dam repairs and lock repairs under \$100 million to federal cost.
  - This plan has the support of more than 120 industry groups and is vastly superior to the current plan; however:
    - Even with the immediate passage of this plan, the Lower Mon Project would not be completed until 2023.
    - Due to competing legislative agendas, it will be difficult for this legislation to get sufficient priority to be passed this session, delaying construction completion on the Monongahela by an additional year or years until the legislation is passed.
    - No funding for the Ohio River improvements were included in this plan, as the authorization report will not be completed for at least another year.
    - This plan does not address the needs for annual maintenance, the lack of which threatens not only the Allegheny River locks and dams but all of the locks and dams on the region’s rivers.

## ROADS AND BRIDGES

Southwestern Pennsylvania contains three Pennsylvania Department of Transportation (PennDOT) districts: District 10, covering Armstrong, Butler, and Indiana counties; District 11, covering Allegheny, Beaver, and Lawrence counties; and District 12, covering Fayette, Greene, Washington, and Westmoreland counties. Within the 10 counties of the Southwestern Pennsylvania Commission (SPC) region lie 300 miles of interstate, 8,000 miles of PennDOT-maintained roads, and 5,300 PennDOT-maintained bridges. According to PennDOT, of the 8,300 miles of roadway in the SPC region, more than 1,700 miles were considered “poor” as of 2008. Of the 5,300 bridges in the region, nearly 1,400 were considered structurally deficient as of 2009. Bridges in these three districts are on average 8–10 years older than the state average. In recent years, more attention and funding have been given to bridges rather than highways. Although funding used to be broken down 60 percent for highways and 40 percent for bridges, funding is now at 70 percent for bridges and 30 percent for highways.

The funding for highway and bridge infrastructure has become increasingly tenuous at both the state and federal levels. Increasing demands for green infrastructure and more fuel-efficient vehicles place further strains on funding sources. PennDOT has stressed



the need for a consistent, sustainable funding source rather than transient stimulus packages. Due to the ongoing federal deficit situation, it has become more and more apparent that highway and bridge infrastructure maintenance is likely to become more a state responsibility than a national one.

### Context:

- Public awareness is very low regarding the extent of highway and bridge deterioration and the amount of baseline maintenance that is needed.
- Districts are faced with the problem of addressing public complaints about road and bridge maintenance, yet this maintenance usually requires the closure of roads and bridges for some duration during peak traffic times.
- The state of the economy and higher gas prices have decreased the number of miles driven. Fuel tax revenues have declined as vehicle fuel efficiency has increased.
- While travel is still projected to increase, capacity expansion is very limited.

Regional priorities and projects include the following:

- Reduction in the number of structurally deficient bridges
- General roadway maintenance, including preserving bridges, seal coating, and microsurfacing
- Revision of asset management strategies to extend pavement life through preservation rather than focusing on pavement smoothness
- Recycling asphalt in pavements and expanding the use of other environmentally acceptable pavement recycling practices



- Implementation of a smart transportation program focusing on overall system preservation by:
  - Making the existing facilities function successfully through their full design life using improved maintenance techniques, providing the right treatment at the right time.
  - Promoting “best fit” transportation projects and looking for the most economical solutions to maintain and improve system capacity and operations.

## Funding:

- Historically, funding has been split 80/20 between maintenance and new construction, but recently the split has been more along the lines of 90/10 and is approaching 95/5. The funding system is detailed below.
- Federal Legislation:
  - Safe Accountable Flexible Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) serves as the primary allocator of federal funds to state infrastructure programs; it was recently extended through December 31, 2010.
    - PennDOT continues to push for a surface transportation reauthorization that would provide a more stable source of funding into the future, but indications are that Congress will not take up a new bill before 2011.
  - ARRA:
    - ARRA has enabled many new asset management and safety projects and has advanced about six months' worth of existing scheduled Transportation Improvement Program (TIP) projects in the SPC region.
    - \$122 million is invested in District 11 projects and \$47 million is invested in District 10's SPC counties.
- State Legislation:
  - Routine maintenance is primarily funded through the Liquid Fuel Tax and Motor License Fund generated by license fees.
    - District 10's budget for routine maintenance is about \$90 million a year; Districts 11 and 12 have budgets of about \$110 million.
  - TIP is the region's blueprint for spending federal and state funding allocations. TIP covers a four-year period and is updated every two years.
    - The federal government this year provided \$19.5 billion in additional funding needed to keep the U.S. highway trust fund solvent through December 31, 2010, which coincides with the end point of the most recent SAFETEA-LU extension. Without this fix, the region's TIP would have experienced shortfalls of up to 40 percent.
- This year's TIP allocation for state Act 44 revenues was not affected because the program budget was calculated for a scenario that did not include potential funding from the tolling of I-80.
- Pennsylvania Act 44:
  - In April 2010, the federal government denied Pennsylvania's request to toll I-80 because the funds generated were to go to the maintenance of other roads and transit systems in addition to I-80.
  - This rejected option would have provided an additional \$472 million toward closing an annual funding gap of about \$3 billion for roads, bridges, and transit funding from the tolling of I-80.
- In light of complications with Act 44, Governor Rendell called a special legislative session for May 2010 to discuss funding alternatives for the identified annual transportation deficit of \$3 billion, including the following:
  - Generate \$1.7 billion by raising the 31 cent per gallon state fuel tax by at least 12 cents per gallon, per the recommendation of a 2006 PennDOT study.
  - Raise gas taxes as a short-term measure as vehicles become increasingly more fuel efficient. At a certain rate, a higher gas tax may even become the tipping point at which consumers adopt more fuel-efficient vehicles.
  - Raise vehicle license and registration fees, which are currently \$36 in Pennsylvania.
  - Pay for the state police force out of the state general fund, instead of the Motor License Fund.
  - Place tolls on interstate highway travel entering and exiting Pennsylvania. Car drivers would have to pay \$1, truck drivers \$5.
  - Create public-private partnerships, which would allow the state to maintain ownership of roads and bridges, while private companies would bear the burden of maintenance in exchange for tolling revenue.

## Regulatory Process Recommendations:

- Greater predictability from PennDOT regarding when permits will be received
- Streamlining PennDOT similarly to Ohio and Maryland's Departments of Transportation
- Streamlining the Bonded Road Program to enable bondholder flexibility to quickly add roads to agreements once an acceptable line of credit has been established



## WATER AND SEWAGE

Southwestern Pennsylvania faces one of its most imposing municipal infrastructure challenges in water and wastewater systems.

The region currently faces the nation's largest concentration of combined sewer overflows, severe flooding, aging infrastructure, abandoned mine drainage, overloaded sewage systems, and bacterial contamination of rivers and streams. Pennsylvania

Infrastructure Investment Authority (PENNVEST) notes that water infrastructure agencies are often capable of designing and operating new assets, but many fall short in maintaining older assets. Most infrastructure is underground and out of sight, and that fact, coupled with public distaste for rate increases, means much of the area's infrastructure suffers from deferred maintenance.

### Service Area/Context:

- More than 800 public authorities, municipalities, and private companies are responsible for managing water and sewage service in the region.
  - Many rural homes still rely on well water and septic systems; in six of the 11 Southwestern Pennsylvania counties, less than half of all households have public sewage.
- The Allegheny County Sanitary Authority (ALCOSAN) provides wastewater treatment to 83 communities in the region, servicing nearly 1 million people.
  - In 1997, the U.S. Environmental Protection Agency (EPA) cited more than 50 communities in ALCOSAN's service area for sewage overflows violating the federal Clean Water Act. This prompted ALCOSAN to create 3 Rivers Wet Weather (3RWW) to provide assistance for implementing better infrastructure maintenance practices.
- The Municipal Authority of Westmoreland County (MAWC) is the largest municipal authority in the state, serving 125,000 customers in Westmoreland County as well as parts of Allegheny, Armstrong, Indiana, and Fayette counties.
  - MAWC owns and maintains 2,300 miles of water transmission lines, 8,100 hydrants, 61 water storage tanks, and 41 pumping stations.



- Pennsylvania American Water (PAW), a wholly owned subsidiary of American Water, is the largest investor-owned water utility in the state, providing water and wastewater services to 887,000 people across Western Pennsylvania.
  - PAW operates about 4,600 miles of water mains, 15,900 hydrants, 12 water treatment facilities, and two wastewater treatment facilities.

### Priorities:

- Projects:
  - 3RWW is currently assisting ALCOSAN municipalities in creating a \$14 million regional feasibility study, the Long-term Wet Weather Control Plan (LTCP).
    - The construction of infrastructure identified in LTCP is to begin in 2015, and all facilities, operations, and maintenance are to be in place by 2026 as per recent agreements among ALCOSAN, EPA, and the U.S. Department of Justice.
  - MAWC, in conjunction with the Greater Johnstown Water Authority, is pursuing funding to construct an interconnected water transmission system.
- Regionalism/Consolidation:
  - 3RWW notes the difficulty of implementing systemwide regulations and technology upgrades across the 83 separate municipal authorities within ALCOSAN.
    - 3RWW has identified several opportunities for communities to consolidate water management systems in order to better manage source water controls on a regional level.
  - MAWC has noted that without an additional water supply source, the potential for service expansion in the Ligonier Valley is limited.

- Green Infrastructure:
  - 3RWW has been exploring infrastructure alternatives in combined sewer overflow areas, including biofiltration systems, porous pavement, green roofs, and rain gardens.
    - These projects reflect a growing emphasis on “green” source water projects as opposed to “gray” sewage projects.
    - As of May 2010, Allegheny County had 25 green roof projects in the planning or development phase.
  - PENNVEST has initiated a nonpoint source remediation funding program to encourage nonstructural best management practices for water quality improvement.



This new program partially responds to the emphasis placed on nonstructural alternatives by Governor Rendell’s Sustainable Water Infrastructure Task Force.

## Funding:

- Local water and sewage projects do not appear in the federal budget, but funding often comes in the form of congressional earmarks.
  - In 2009, the Army Corps of Engineers received \$8 million for water projects (not including ARRA funds).
  - 3RWW notes that as of this year, these appropriations have largely been eliminated at the state and federal levels due to ongoing budget problems.
- Projects that are fully designed and permitted may apply to PENNVEST for funding. PENNVEST is a state-sponsored revolving loan and grant program that has been in existence for 21 years; it allocates funding at three meetings each fiscal year.
- In 2009, Pennsylvania received \$226 million in ARRA water and wastewater project investment; PENNVEST also distributed these funds through low interest loans and grants.
  - In response to potential ARRA funding, PENNVEST received fund applications for projects totaling \$1.2 billion.
  - Several ALCOSAN communities received funding in the last distribution to help with overflow mitigation, including Neville Township and the City of Pittsburgh.
- In 2008, the Pennsylvania legislature permitted and the voters approved an \$800 million bond issue referendum to make investments in water, sewer, dam, and flood control infrastructure. This money is administered by the Commonwealth Financing Authority and is known as the H2O PA program. \$665 million was set aside by the enabling legislation for water and sewer projects; about \$175 million remains to be allocated as of June 2010.
- 3RWW has three federal EPA appropriations remaining through 2012. They each require 45 percent cost matching from local grants.

## Regulatory Process Recommendations:

- In 1996, the Distribution System Improvement Charge (DSIC) legislation was enacted. It provides for a return on pipe, hydrant, and meter replacements each quarter. DSIC provides enhanced cash flow and earnings for the water utility while easing rate increases on customers. Water utilities cannot earn more than the last allowed rate of return when they impose the infrastructure surcharge. Legislation has been proposed since 2008 to expand this charge to wastewater systems, which would help to mitigate the impact on customers while addressing required capital investments for Pennsylvania’s wastewater infrastructure.
- Improving the state’s tax structure: Currently, 4.35 percent of each customer’s bill relates solely to capital stock tax, corporate net income tax, and the public utility realty tax. By inducing government spending and streamlining its corporate tax structure, the state can make its business environment more favorable to job creation and help to control water costs.
- Pursuing the recommendations made by the governor’s Sustainable Water Infrastructure Task Force, which include the following:
  - Better asset management and environmental management systems, especially for small utilities, and the use of more innovative and cost-effective technologies
  - Full-cost pricing that recognizes the total cost of providing water and wastewater service over the long term, so that utilities implement price structures that recover costs effectively
  - Water efficiency programs and improved consumer education to help conserve water resources while increasing public awareness of the value of water
  - Adoption of watershed management principles into utility planning, so that decision makers consider watershed-based, cost-effective alternatives as well as traditional investment choices
  - Regionalization to take advantage of economies of scale, increased efficiencies and greater access to capital and expertise
- An increase in DEP personnel: Due to recent retirements, there is a long delay in getting National Pollutant Discharge Elimination System Part II permits for treatment plants.

## PUBLIC TRANSIT

Transit agencies in Southwestern Pennsylvania oversee not only the transit vehicles owned or contracted by the transit companies but also garages, maintenance facilities, park-and-ride lots, and passenger centers. The Port Authority of Allegheny County provides 97 percent of the transit services in Southwestern Pennsylvania, maintaining more than 850 buses, 83 light rail transit vehicles, two inclines, 25 miles of light rail track, 19 miles of transit-only guideways, six maintenance facilities and garages, and 63 park-and-

ride locations. The Westmoreland County Transit Authority (WCTA) provides service within Westmoreland County as well as commuter services to downtown Pittsburgh, Oakland, and Johnstown. WCTA owns its buses, its maintenance facility, and a Greensburg transit center. Much like highways and bridges, public transit agencies are funded by a mix of federal and regional sources that are highly competitive. Agencies must juggle growing maintenance needs with the increasing demand for newer, greener infrastructure.

### Demand/Service:

- The Port Authority has recently experienced a 5 percent decrease in ridership and subsequent revenues due to increased unemployment. In 2007, in response to the economic recession, the Port Authority was forced to cut service by 15 percent and eliminate 29 routes.
- However, the Port Authority projects increasing demands on infrastructure due to normal wear and tear and increasing age of vehicles and facilities.
- There is a public desire for expanded light rail infrastructure, particularly in the Oakland–Downtown corridor. The Port Authority is not entertaining plans for expansion at the moment.
- WCTA has reported relatively stable ridership levels this year and has not needed to increase fares since February 2008.
- WCTA notes that as the price of fuel increased in the past few years, public transit ridership increased as well.



### Regional Projects:

- Port Authority:
  - The Port Authority is currently finishing the North Shore Connector, an underground light rail line between Downtown and the North Shore.
  - The regional smart card system, which allows bus passengers to swipe prepaid cards and IDs, should be completely installed in buses by the end of 2010, with beta testing into early 2011 and mass marketing of cards by 2012. Other transit authorities are looking into joining this system.
  - The Port Authority is currently looking into a real-time passenger information system.
  - Twenty additional hybrid electric buses have recently been purchased, and biodiesel has been introduced to the existing fleet.
- The Port Authority application for Transportation Investment Generating Economic Recovery (TIGER) funds to create a rail line between Downtown and Oakland was not accepted. The TIGER grant program is a part of ARRA.
  - The Port Authority notes that at the moment, there are no available resources for rail expansion, but that it is being pursued by the private sector, particularly the Allegheny County Transportation Action Partnership.
- WCTA:
  - WCTA is in the study phase of a human service transit program that shares contracts with local taxi companies.
  - WCTA has purchased two 20-passenger electric hybrid vehicles as its first foray into green technology.

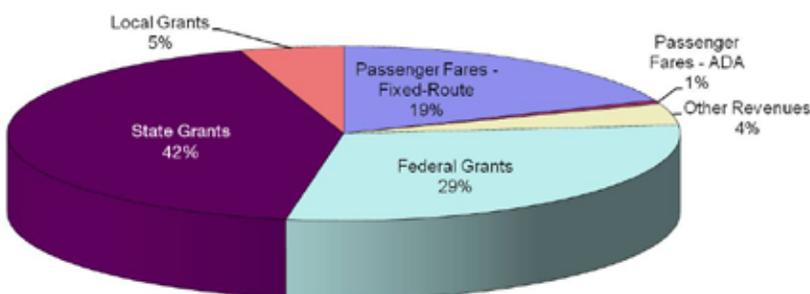
## Workforce:

- The Port Authority reports that stock market losses initially resulted in a 30 percent decline of net asset values of pensions; to replace this loss, the Port Authority anticipates contributing an additional \$12 million into the pension fund this year.
- The Port Authority's personnel contract is set to expire in 2012, and the Port Authority is currently bargaining with its contracted police.
  - The police force currently represents \$6 million of the budget.
- WCTA reports an aging workforce and difficulty in attracting younger, qualified employees.
  - Typically, applicants are rarely under the age of 30, and many are of retirement age.

## Funding:

- The Port Authority is presently forecasting in fiscal year 2011 a \$25–50 million operating budget deficit and a \$45–90 million capital budget deficit for State of Good Repair projects towards maintenance issues, asset management, and financing strategies.
- Federal funding:
  - Jobs for Main Street Act of 2010:
    - The Port Authority has identified approximately \$141 million worth of “shovel-ready” projects in anticipation of allocations from this legislation if passed.
  - ARRA:
    - All previous ARRA allocations to the Port Authority have been dedicated to finishing the North Shore Connector.
    - Last year, the Port Authority was denied \$5 million in TIGER funds for hybrid electric buses.
    - More recently, the Port Authority was denied \$30 million in TIGER funds for enhancements to the Downtown–Oakland corridor.
  - WCTA has used its ARRA allocations to accelerate planned bus purchases.
- Regional funding:
  - State and local funding is largely reliant on sales tax sources.
    - Shortfalls in these sources entail reduced spending on programs.
  - Act 44:
    - The Port Authority anticipates a \$50 million capital budget shortfall solely from the federal denial of tolling for I-80.
    - The revenues from Act 44 funding constitute 62 percent of the Port Authority's annual budget, and the Port Authority does not anticipate funding increases in the near future.
    - WCTA relies on PennDOT discretionary funds to provide the 20 percent match necessary to receive federal funds for capital projects
      - PennDOT's discretionary funds, which are based on the bonding of the turnpike, have run out.
      - As a consequence of the lack of I-80 tolling and the subsequent PennDOT fund shortfall, WCTA will freeze operating funds this year.
        - Funding has been relatively level the past couple of years, so WCTA does not anticipate a funding problem in the short term. However, WCTA is cognizant that if such a shortfall continues, it may face a funding situation similar to those of larger transit agencies in Pennsylvania.

## WESTMORELAND COUNTY TRANSIT AUTHORITY Transit Revenue By Source Fiscal Year 2009



## Regulatory Process Recommendations:

- Consolidation by PennDOT of all paratransit programs under its direction and the development of common paratransit delivery standards across all programs

## RAILWAYS

Railways have become an increasingly important and efficient freight transportation system in Pennsylvania. Trains are capable of moving a ton of freight more than 436 miles on a single gallon of fuel, making rail three times more efficient than roadway transportation. The rail system of Southwestern Pennsylvania consists of more than 1,300 miles of track operated by 17 railroad companies, including Class I railroads Norfolk Southern Corp.; CSX Corporation, Inc.; and Canadian National Railway Company. Short line and regional railroads have limited linkages in western New York, eastern Ohio and West Virginia, whereas Class I railroads constitute a larger system spanning the eastern United States and Canada. Norfolk Southern alone runs 70–90 trains a day through the region. Amtrak also runs four daily passenger trains through Pittsburgh: the Capitol Limited between Washington, D.C., and Chicago, and the Pennsylvanian to and from New York.

Much of Pennsylvania’s railroad infrastructure was first established more than a century ago. As such, the costs of seasonal maintenance and upgrades for new safety and engine technologies are expensive. The Commonwealth of Pennsylvania is considered a national leader in rail support in the provision of funding under the Rail Freight Assistance and Technical Assistance programs. These two programs currently provide \$20 million for rail infrastructure extension and rehabilitation in Pennsylvania. These funds are allocated on a competitive basis to railroads or railroad-served businesses. The rail industry in general is responsible for virtually all costs of its infrastructure maintenance, whereas the trucking industry effectively receives a subsidy from the public provision of highways.

### Demand:

- The recent economic downturn has reduced overall rail demand, as manufacturing in most sectors has declined. However, railway companies predict increasing activity as

rail’s lower costs and energy efficiency become more attractive and manufacturing production increases.

### Projects:

- National Gateway project
  - An \$842 million project spearheaded by CSX and intended to create a more efficient double-stack cleared rail corridor between Eastern sea ports and Midwestern distribution centers
  - Double-stack clearances allow trains to carry twice the amount of freight on the same number of trains, creating less of an environmental impact.
  - According to CSX, the project is expected to yield an estimated \$22 in public benefits for every dollar of

public money invested, reduce transit times between coastal ports and metropolitan centers by 24–48 hours, reduce highway congestion and transportation emissions, and create more than 50,000 jobs.

- Many railroads are pursuing diesel engine retrofits in anticipation of tighter emission standards on diesel locomotives.
- The Rail Safety Improvement Act of 2008 mandated the installation of Positive Train Control systems by 2015. These systems provide more automated prevention of collisions, derailments, and passenger and construction worker injuries.

### Funding:

- CSX received \$98 million from the TIGER grant program for its National Gateway project. Sponsoring states have pledged an additional \$189 million, and CSX will contribute \$395 million.

- Many rail projects qualify for federal stimulus funding as being “shovel ready.” However, because railroad companies independently operate their own infrastructure, there is no formal mechanism through which they can share project readiness with PennDOT, which allocates the federal funding.

### Regulatory Process Recommendations:

- Streamlining federal and environmental regulations such as the National Environmental Policy Act (of 1969). Regulations

requiring environmental impact statements and studies should be made more efficient.

## AIR TRANSPORTATION

Airports, of all transportation sectors, have had the most publicity in light of the recent economic downturn, as they are the largest passenger and freight links throughout the region and the country. Southwestern Pennsylvania alone operates two commercial airports, the Arnold Palmer Regional Airport and the Pittsburgh International Airport, as well as public general aviation airports in every county. The Allegheny County Airport Authority (ACAA), operating Pittsburgh International Airport (PIT) and Allegheny

County Airport (AGC), serves Western Pennsylvania, eastern Ohio, northern West Virginia, and western Maryland as well as major commercial hubs throughout the country. The Arnold Palmer Regional Airport in Westmoreland County offers regional service flights. Regional service airports face a unique issue in having to support major airlines, as airlines will not provide service without revenue guarantees from the airports.

### Demand:

- Significant reductions in air traffic by major carriers reduced the PIT capital budget in 2010, and traffic is projected to decline further in 2011. Additional infrastructure needs are projected to arise as the PIT Midfield Terminal complex becomes 20 years old.
- The Arnold Palmer Regional Airport experienced commuter traffic decreases in recent years as it lost major carrier service to PIT and other large hub airports.

### Projects:

- ACAA is currently working on maintaining existing airport infrastructure at PIT, completing a \$48 million deicing stormwater treatment plant, and revamping the PIT public parking garage.
- ACAA is pursuing the implementation of an airportwide Pennsylvania Guaranteed Energy Savings Act contract, which will decrease energy-related operating costs that in turn reduce the costs passed on to the air carriers through landing fees and rents.
- The Arnold Palmer Regional Airport is pursuing increased commuter traffic to Pittsburgh as well as investigating funding sources for solar power arrays.



## Funding:

- Public airports receive federal funding from the Airport Improvement Program (AIP), either directly from the Federal Aviation Administration (FAA) or distributed as a block grant through the Pennsylvania Department of Transportation. This grant covers 75 percent of approved projects for larger commercial service airports and 95 percent of approved projects for smaller reliever or general aviation airports.
- PennDOT also supports the Aviation Transportation Assistance Program, which distributed \$10 million the past budget year. Pennsylvania's Aviation Development Program raises and distributes about \$8 million a year from taxes on aviation fuel. ACAA receives about \$1 million a year from this program. Both of these programs cover 50 percent of the additional costs of federally eligible programs as well as 75 percent of total project costs for nonfederal projects.
- Primary funding for PIT is derived from a \$4.50 Passenger Facility Charge (PFC) per departure ticket.
  - Revenue from AIP and PFC are uncertain due to a three-year congressional delay in the reauthorization of these programs. A PFC increase to \$7 is currently in a U.S. House of Representatives Bill under consideration.
- ACAA received approximately \$11 million in ARRA funds from FAA and approximately \$200,000 from the Pennsylvania Department of Environmental Protection (DEP) this past year. All funds are currently under contract for airfield pavement rehabilitation projects at both PIT and AGC and for a portion of the PIT Energy Savings project.
- The Arnold Palmer Regional Airport's primary source of service funding is the Small Community Air Service Development Program grant, which it was denied in 2010 due to the competitive nature of the grant and the minimal amount of funds available.

### PIT & AGC - 2010 CAPITAL BUDGETS Executive Summary - 4/7/10

#### Funding Sources Summary (PIT & AGC)

ACAA Non-PFC	\$10 MM
ACAA PIT PFC	\$0 - 15 MM
FAA Grants	\$9 - 15 MM
PaDOT Grants	\$1 - 2 MM
Other State Grants	\$0 - 25 MM
Other Funding	\$0 - 33 MM
<b>ACAA TOTAL:</b>	<b>\$20 - 100 MM</b>

## Regulatory Process Recommendations:

- A streamlining of all regulatory processes so that normal procedures aren't designed to address abnormal situations

## DAM SAFETY

Pennsylvania was the first state to enact dam safety legislation after the collapse of dams in Johnstown in 1889 and Potter County in 1911. The current law, Pennsylvania's Dam Safety and Encroachments Act (Act 325), gives DEP authority to regulate dams and other water obstructions. The Southwestern Pennsylvania region has 637 dams, 197 of which are classified as "high hazard"; a high hazard dam is defined as one for which failure is likely to cause fatalities and extensive property damage. Ownership of

dams is almost evenly split between public authorities, such as the Pennsylvania Department of Conservation and Natural Resources (DCNR), the Pennsylvania Fish and Boat Commission, and public water authorities, and private entities. In addition, there are 16 multipurpose reservoirs in the Southwestern Pennsylvania region. Dam rehabilitations and replacements are often multimillion dollar projects, and Pennsylvania currently does not have a funding assistance program for private dam owners.

### Priorities:

- DEP estimates that the costs for 15 publicly owned high-hazard dams include:
  - One DCNR dam in Greene County funded in the state capital budget at \$30 million,
  - Eight Fish and Boat Commission dams that are not funded and have a total estimated rehabilitation cost of \$52 million, and
  - Six municipal dams in the Southwest region that have a total estimated repair cost of \$14 million.
- DEP has increasingly encouraged dam removal when a dam is not necessary for the following reasons:
  - Removal is often less costly than continuous maintenance and rehabilitation, and state funding is often available to private owners for removal.
  - Removal is often the best solution for a high-hazard dam and the liability it poses to private owners.
  - Dams have been shown to be detrimental to local watershed ecosystems and have lasting effects further downstream.

### Funding:

- The funding for dam projects comes from the state capital budget, DEP's Growing Greener grants, or private sources.
- PENNVEST considers loan and grant applications for the maintenance of public water supply dams.
- H2O PA, the 2008 voter-approved bond issue, set aside \$50 million for rehabilitation of high-hazard dams. The Commonwealth Financing Authority has allocated all of this money.

## FLOOD CONTROL

Flooding is a long-standing problem in Southwestern Pennsylvania, and has become increasingly dangerous to local families and economies due to ineffective stormwater management. Stormwater containment and regulation vary by municipality, and many communities also depend on state flood control projects. Act 167, Pennsylvania's Stormwater Act, requires counties to prepare and adopt watershed-based stormwater management plans and requires municipalities to adopt and implement ordinances

to regulate these plans. Both the U.S. Army Corps of Engineers and DEP assist municipalities in flood control projects. For larger waterways projects, the Army Corps typically provides federal funding equal to 65 percent of project cost. Under Act 167, DEP provides technical assistance and defrays 75 percent of the costs for flood control development plans and 75 percent of the costs for administration of such plans.

### 2010 Repair Projects:

- When sites are damaged by flooding, engineers can only restore them to operable condition and cannot do any additional repairs. Also, debris can only be removed within the footprint of an original project.
  - Turtle Creek: \$1.5 million for emergency repairs, removing sediment from the creek bed, repairing retaining walls, removing bridges, and further development
  - Saw Mill Run: \$500,000 for repairs to the damaged concrete sill, apron, and stone protection within the stilling basin; culvert repair; and sediment removal from the downstream box channel and the upstream end of the project
- The Commonwealth Financing Authority has allocated \$25 million of the \$85 million set aside for flood control projects in the 2008 H2O PA bond issue. Applications for the remaining \$60 million are expected to far exceed the available funds.



### Green Development:

- Turtle Creek Borough is investigating green stormwater management techniques such as green roofs and rain barrels but currently lacks the funding. Westmoreland and Washington counties are in the midst of development planning and looking at nonstructural approaches to flood management, such as slowing the speed of water as it flows to lower areas of watersheds.

### Cost Saving:

- Flood control projects are typically turned over to local communities to maintain, where the projects then become long-term liabilities. Some counties are pursuing shifting the cost to individuals benefiting from green flood control projects.

## NATURAL GAS

In Southwestern Pennsylvania, natural gas is the primary source of home heating and water heating, covering more than 90 percent and more than 60 percent of their respective markets. The region's natural gas infrastructure is split among four companies—Columbia Gas of Pennsylvania, Peoples Natural Gas, Equitable Gas Company, and T.W. Phillips Gas and Oil Co., which serve hundreds

of thousands of customers in the region and are responsible for about 20,000 miles of gas pipeline and several underground storage facilities. These companies not only serve the SPC region, but also have critical transmission links outside the state extending to the eastern seaboard and the Gulf Coast. All four companies are regulated by the Pennsylvania Public Utility Commission (PUC).

### Service:

- Natural gas distribution companies (NGDCs) have seen a steady decline in regional population and commercial industry in the past few decades as well as steadily increasing energy efficiencies in appliances and manufacturing processes, resulting in lower fuel demand.
- Unlike most of the United States and Pennsylvania, natural gas companies in the southwestern part of the state are not responsible for the connecting gas lines between the main lines in the street and households.

### Funding:

- Gas companies make their financial projections based on national and regional economic indicators such as housing, historic fuel usage trends, commercial and industrial projection, and weather cycles.
- Funding to maintain infrastructure comes from rate payers and corporate investors.
  - Columbia Gas alone invests about \$20 million a year in baseline maintenance in Southwestern Pennsylvania.
  - NGDCs have had limited opportunity to qualify for ARRA funding, as they have been unable to prove increased energy efficiencies in systems or improved sustainability of infrastructure.
- Distribution companies are prohibited by law from profiting from the cost of gas, therefore, return on investment (profit) must come from operation of the pipeline system.
  - Regulated NGDCs are permitted by PUC to make a negotiated rate of return on operations and on their investment in pipeline infrastructure.
  - To receive an increased return on operations, companies must either file a "rate case" with PUC, which involves an extensive process of review of costs of investment, operations, and negotiation, or they must lower their operating costs between rate cases, thus increasing return through efficiencies.
  - Due to the fluctuating cost of gas, there are no fewer than four rate filings a year. Rate filings may take as long as a full year to prepare and complete.

### Priorities:

- Many companies are moving toward plastic pipe materials due to lower maintenance costs.
- Some natural gas companies are pushing for a distribution system improvement charge (DSIC), much like the one granted to water companies.
  - DSIC would allow for automatic rate increases for recovering infrastructure capital investments rather than requiring rate case filings. DSIC legislation is awaiting action in the state House of Representatives Appropriations Committee (HB 744).
  - Among the criticisms of the proposed DSIC as currently drafted are that it:
    - Allows for automatic increases in rates to reflect the value of new investments but does not reflect any reductions in the value of existing distribution plants resulting from depreciation and retirements during the same period. The concern is that ratepayers are thereby double charged.
    - Contains no limit on the overall level of rate increases that can be obtained by natural gas utilities through automatic adjustments, which means that pipeline investment recovery rates can be increased indefinitely without a Commission review of the utility's overall base rates.

### Regulatory Process Recommendations:

- Raising permit fees to increase the number of staff members and inspectors
- Legislation that would provide an alternative rate-making mechanism to promote and encourage timely and predictable cost recovery for NGDC: This would mean greater investments in infrastructure, energy conservation, and efficiency and favorable agency ratings. Specific examples include decoupling mechanisms, a distribution system improvement charge, and greater recovery of fixed costs through fixed charges.

## TELECOMMUNICATIONS

The telecommunications sector is one of the most competitive infrastructure sectors in Southwestern Pennsylvania and recently has been the target of groundbreaking legislation on the regional and federal levels. Telecommunications service is shared by several providers, including incumbent local exchange carriers (ILECs) such as Frontier Communications Corporation, Windstream Communications, and North Pittsburgh Systems Inc. (now part of Consolidated Communications); competitive local exchange carriers (CLECs); and intermodal carriers such as Comcast, Verizon,

and Vonage. The Pennsylvania Public Utility Commission, the Pennsylvania Telephone Commission, and the Broadband Cable Association of Pennsylvania oversee phone and Internet carriers. Telecommunications utilities are unique in the sense that they must provide a spectrum of services over different modes of infrastructure, including residential telephone service; fiber-to-the-premises voice, data, and video products; DSL; wireless; and high-speed, high-capacity data services for businesses.

### Service:

- Telecommunication utilities, particularly larger carriers, have service areas that do not necessarily coincide with county or political subdivisions. Indeed, wireline and wireless infrastructure areas sometimes do not overlap.
- Larger providers may have more than one service company operating in Southwestern Pennsylvania; for example, Verizon Pennsylvania, Verizon North, and Verizon Wireless are Verizon affiliates all operate their own network infrastructure.
- The recent recession has seen a decrease in customer demand for telecommunication products and services in some sectors.
  - Verizon notes, however, that despite recent economic conditions, infrastructure development in the region is expected to expand and be funded in a timely manner.

### Funding:

- Utilities typically self-fund their network infrastructure through operating revenues from customers.
  - Companies like Verizon also receive funds from publicly traded securities.
- ARRA provided \$7.2 billion for broadband buildouts in the form of competitive grants aimed at unserved and underserved areas.

### Priorities:

- Regional development is in part required by Act 183, which provides for broadband network access to all Pennsylvanians by 2015.
  - The Federal Communication Commission's National Broadband Plan, submitted to the U.S. Congress in March, may induce legislation affecting current broadband development.
- Verizon is expanding its copper broadband (DSL) network and continuing development of its advanced fiber network (FiOS).
  - Verizon is also working to introduce 4G wireless service to the region.
  - Verizon needs to finish the two-decade buildout of its broadband network in the more rural areas of Verizon's southwest Pennsylvania service territory. This expansion will likely take until 2015 and cost tens of millions of dollars.

### Regulatory Process Recommendations:

- Statutory changes reducing or eliminating state regulation of incumbent telephone companies like Verizon that would help to promote competition and infrastructure investment: Verizon is no longer a monopoly provider and is hampered by increasingly archaic regulations that do not extend to other types of providers, such as cable and wireless companies, in the competitive telecommunications market.

## ELECTRICITY

Since 1970, the average per-household demand for electricity has increased 30 percent. As a utility, electricity is ubiquitous in residences and industries throughout Southwestern Pennsylvania and the rest of the United States. Prior to deregulation of the electric industry in 1999, seven major utilities (West Penn Power Company, PPL Corporation, PECO, Penn Power, Pennsylvania Electric Company, Metropolitan Edison Company, and Duquesne Light Company) owned, operated, and maintained their own electric generation, transmission, and distribution facilities throughout the state. Like water and natural gas, electric utilities are overseen by the Public Utility Commission, which regulates their profits,

electricity reserves, and consumer rates. Today, after deregulation, transmission lines are under the control of a regional transmission operator (RTO), which controls the flow of electricity from multiple generators in multiple states. The RTO for most utilities in Pennsylvania is PJM, which has more than 176,000 megawatts of generating capacity, 60,823 miles of transmission lines, 1,271 generation sources, and more than 500 member companies. The consolidation of transmission, and sometimes generation services, is a means for utilities to provide cost effective, reliable service to their customers.

Electric companies are high-profile utilities, and with growing awareness of the impact of energy usage on climate change, an array of legislation at the state and federal level has sought to regulate all aspects of electric utilities from infrastructure to implementation. The more recent initiatives include the following:

- Pennsylvania's coal industry as a source of electricity generation in particular has gained much attention, and there has been a demand to supplement coal production with wind farms and solar panel farms.
- Federal renewable electricity standards (RES) legislation under consideration would force utilities to provide at least 25 percent of electricity from renewable resources by 2025.
  - This may burden utilities in areas such as Southwestern Pennsylvania, where the generation of power is still largely dependent on coal.
  - Pennsylvania has a state Alternative Energy Portfolio Standard goal of providing 18 percent of electricity from renewable resources by 2021.
- Federal carbon capture and storage (CCS) legislation may place some burden of funding CCS projects on electric distribution companies (EDCs) such as Allegheny Power in the form of a wires charge on power delivered from fossil fuels.
- Pennsylvania's Act 129, which created the Energy Efficiency and Conservation (EE&C) program, requires EDCs to reduce electricity consumption 1 percent by May 31, 2011 and 4 percent of the highest hours of peak demand by May 31, 2013.
  - The EE&C program also requires that every home and business be equipped with "smart meters" within 15 years. This has met with opposition from customers over potential costs as well as the security of customer information and the electric grid.
  - EDC plans to meet the requirements of Act 129 include:
    - Rebates for replacement of older appliances with high-efficiency appliances;
    - Compact fluorescent lights, variable speed drives, and demand-side management plans for commercial and industrial customers; and
    - Free energy audits and seminars for customers to educate them in how to use energy more efficiently, saving both the environment and money.

# THE IMPACT OF THE MARCELLUS SHALE ON INFRASTRUCTURE



The exploration and development of the Marcellus Shale has had a far-reaching impact across most if not all infrastructure sectors. The influx of industry into the region may provide a much-needed economic boost to utilities and businesses that are ready for the challenge but also may result in a slew of complications to already strained infrastructure.

## Permitting:

Pennsylvania's Department of Environmental Protection (DEP) is responsible for regulating well permits, wastewater, and earth disturbance activity. It also is responsible for safely regulating Marcellus Shale natural gas reservoirs. Since 1859, 350,000 commercial wells have been drilled in Pennsylvania. According to the March 28–April 1, 2011, weekly workload report from the Bureau of Oil and Gas Management, there already have been 877 Marcellus Shale well permits issued since the beginning of 2011. Each well that's drilled affects a part of Pennsylvania's infrastructure, so it is very important to examine how these sectors are handling these impacts and what procedures need to be in place to continue Marcellus Shale drilling safely and with fewer negative outcomes.

## Water and Sewage:

Water is one of the most prominent sectors affected by drilling in the region. Drilling and fracturing a single well typically requires 4 million gallons of water, and companies project operating hundreds of wells in a single year. The chemicals used in "fracking" fluid, acid and gas that are encountered in well bores, diesel fuel, carbon dioxide, benzenes, ethylbenzene, toluene, xylene, surfactants (soaps), polymers (plastics), foaming agents, antiscaling agents, corrosion inhibitors, and toxic biocides may detrimentally affect natural underground sources of drinking water should they come in contact with them.

A general belief exists that appropriate protections are needed so that gas drilling companies and associated industries act responsibly. In the case of water, drilling companies need to adhere to all U.S. Environmental Protection Agency and state DEP regulations. DEP is responsible for the well permitting process and regulates wastewater discharges. The U.S. Army Corps of Engineers monitors regional waterways, and any potential source of wastewater discharge is a concern. In the fall of 2008 and in 2009, the Army Corps of Engineers' water quality monitoring stations on the Monongahela River detected unusually elevated total dissolved solids levels during low flow conditions, potentially due to drilling activities in the area. These elevated levels led to concern among public water utilities that withdraw from the Monongahela River that the water would not meeting drinking standards.

The corps also is responsible for 11 upper Ohio River reservoirs in Western Pennsylvania and manages water quality and quantity

improvement projects through very sensitive storage and release schedules. If additional water is released into streams and tributaries without careful study, reservoirs may be impacted. The Port of Pittsburgh Commission also has raised concerns about how the demand for water from the drilling industry might affect navigation during the dry season. While the Marcellus Shale provides opportunities to move significant volumes of sand and water on the waterways, the current waterway infrastructure is suffering from a lack of maintenance and requires major rehabilitation.

Another area of concern is the transparency of the permitting process for water withdrawals. Companies like Pennsylvania American Water rely on regulatory agencies like DEP, the Delaware River Basin Commission, and the Susquehanna River Basin Commission to review permit requests from gas drillers. They also rely on these regulatory agencies to allocate both surface and groundwater sources to all users within the basin. In these instances, Pennsylvania American Water does not have any access to information about the permits during the review. These companies would like to see legislation changed so there is greater transparency for information sharing regarding permits.

Additionally, waterway infrastructure is suffering from insufficient maintenance and now requires rehabilitation. The recent announcement of Governor Tom Corbett's \$134 million investment in water infrastructure projects hopefully will repair some of the struggling infrastructure. The projects will help 21 counties across the state.

When Marcellus Shale activities first developed in Southwestern Pennsylvania, a few existing sewage treatment plants took on the frack wastewater for treatment. Many saw this as an easy source of extra revenue for just a little extra expense in chemicals. Treatment plants soon found that they could not meet effluent limits and had to report water quality to DEP. The frack water was later found to contain too many metals for a standard sewage treatment plant to remove. Many rural sewage plants could benefit from the additional revenue stream of treating frack water, but most lack the ability to treat the water without some sort of pretreatment.

### **Roadways:**

Roads and transportation conditions have been impacted by drilling, often because there is a disproportionate impact on locally owned roadways due to well locations and the structural design of the roadways. There has been an increase in drilling companies applying for heavy hauling permits through PennDOT. So far, Districts 3-0 and 12-0 have been the most affected. PennDOT has observed increases in driveway permits (to access new sites), gas line permits (required if pipelines cross state roads), and permits for the ability to haul on posted roads (secondary roads with a 10 ton limit). There also has been an increase in staff needed to check Marcellus roads weekly. Non-Marcellus roads are checked irregularly or when a situation calls for it. Anyone who is applying for a permit on a Marcellus road is required to submit a road user plan, which outlines road usage, the type of traffic that will be utilizing the road, a maintenance strategy, and the number of trucks that will use the road. This plan is a preemptive measure to identify whether the roads can meet the permittee's needs. Additionally, the permittee is required to submit a winter maintenance plan if the permittee is working through the winter. Companies are not allowed to haul on these roads without the aforementioned plan.

A policy modification has been made in response to Marcellus Shale activities with regard to damaged roads. After inspection damage is noticed on a Marcellus road, letters are sent out to permittees. The permittees then have five days upon receipt of the notification to repair the road or their permits may be revoked. The repairs made by companies that damaged roads have saved PennDOT from some basic maintenance and repair expenditures.

Counties and municipalities that own and maintain roads are currently allowed under state law to require owners of overweight vehicles to post bonds to cover the cost of damage they cause. The current bond limit is set at \$12,500 per road mile. Legislation has been introduced to increase the PennDOT bonding requirements (which have not been adjusted since 1978) to cover today's construction costs in order to better protect public roads.

### **Electricity and Natural Gas:**

Other industries with obvious correlations to Marcellus Shale activities are electricity and natural gas. Increased gas production should create a higher regional demand for pipeline capacity to

bring the gas to market. As the market for production grows, there most likely will be an upgrade and expansion of transmission infrastructure.

Shale gas is allowing for growth in gas-fueled electricity generation, but currently there are major delays in stream-crossing permits for gas pipelines. Eliminating general permit air source exemptions will subject thousands of frack compressors and drill rig engines to new permitting and control requirements. There are concerns from those in the industry that these regulations will slow development and add to operating costs. Aggregations of air emissions sources will subject isolated and rural gas-related facilities to EPA New Source Review/Prevention of Significant Deterioration rules.

On the demand side, electricity utilities may see an influx of demand from gas companies operating in the Marcellus Shale, which has some local electricity companies scrambling to ensure that they are prepared to meet the need. The current electrical grid does not have the capacity to completely fulfill the energy needs, particularly the energy needed to run the compressor stations. Some areas in which the gas companies operate do not even have electrical service.

### **Railways:**

As a result of traffic/volume increases, railway costs have gone up in many areas, especially in Bradford and Susquehanna counties. There also have been material cost increases. Part of the issue is that these sites, which have not been used in years, are experiencing much higher volumes as a result of Marcellus Shale activity.

### **Air Transportation:**

Finally, airports have seen modest increases in enplanements due to gas company employees' traveling to Pennsylvania from out of state. The Westmoreland County Airport Authority (WCAA) currently is securing environmental clearances to drill wells at Rostraver Airport, which may have a substantial impact on WCAA's budget in the future. The Federal Aviation Administration is overseeing this clearance process, and has required the WCAA to provide them with complete information regarding the possibility of drilling on airport property. The Allegheny County Airport Authority is investigating drilling options for more than 3,000 acres of undeveloped land around Pittsburgh International Airport. It is expected that the drilling will have a positive impact on the airport authority.

### **Public Transit and Telecommunications:**

These two industries have yet to report any significant effects from the drilling of the Marcellus Shale, but that does not preclude problems or benefits in the future.

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