

Energy Alliance of Greater Pittsburgh Strategic Plan

Introduction: With its rich portfolio of energy-related assets, Greater Pittsburgh is uniquely positioned to deliver innovative solutions to address the energy needs of the region, the United States, and the world. The region enjoys a competitive advantage in natural resources, supply chain presence, or innovation in the energy sectors of coal, natural gas, nuclear, wind, solar, electricity distribution and transmission, and intelligent building technologies (see Appendix B.) That potential will be best realized by collaborating across business, government, and academia to drive the public policy, business climate, and technology innovation that is necessary to attract investment and create jobs in the energy field.

The Energy Alliance of Greater Pittsburgh is built upon the premise that coordination across sectors is the best way to expand the entire industry for *all* sectors:

- Working collaboratively is the best way to increase the breadth and scope of Pittsburgh's energy economy, making it easier to attract talent and investment.
- Working collaboratively will provide a stronger voice in the policy discussions at the state and federal level that will greatly impact the direction of the regional economy.
- Working collaboratively will provide a platform to respond appropriately to public questions – and concerns – about the energy opportunity and the potential environmental issues.
- Working collaboratively improves the potential for identifying and developing the next generation of energy technologies.

Staff support for the Energy Alliance comes from an unprecedented partnership between the Allegheny Conference on Community Development and Innovation Works, bringing together complementary core functions and support networks. The Allegheny Conference provides decades of experience in public policy research, development and advocacy, and expertise in regional marketing, backed by a board consisting of the CEOs of some of the largest corporations, universities, and foundations in the region. Innovation Works brings staff and financial resources focused on identifying and supporting tomorrow's technology, with a rich network of contacts in the research, innovation, and venture capital areas.

I. Vision

Pittsburgh is the **Nation's New Energy Capital**, implementing a new model for industry collaboration to maximize Greater Pittsburgh's competitive advantages in energy and related industries.

II. Mission

The mission of the Energy Alliance of Greater Pittsburgh is to increase the scale of the region's energy industry, creating and retaining jobs and attracting investment across a portfolio of energy-related assets, without compromising the region's environment.

III. Objectives

The Energy Alliance will accomplish this by pursuing the following objectives:

- **Objective 1:** Demonstrating the need for a *portfolio approach* to addressing 21st century energy demands that integrates traditional energy sources; alternative sources; and technology and innovation that improve efficiency and conservation.
- **Objective 2:** Supporting a *broad network* of energy-related corporations, research institutions, nonprofits, and others to maximize the sharing of resources and ideas to advance all aspects of the regional energy opportunity.
- **Objective 3:** Securing *policy changes* at the state and federal level that support the portfolio approach, including a comprehensive framework that facilitates the development of the Marcellus Shale in a productive and responsible manner.
- **Objective 4:** Increasing Pittsburgh's *jobs and investment* in the global energy-related supply chain by emphasizing for business decision-makers the region's extensive energy portfolio consisting of abundant natural resources, engineering and manufacturing expertise, and a capacity for innovation across industries.
- **Objective 5:** Improving the region's *research and innovation* by increasing the amount of energy-related grants from the federal government and other sources.
- **Objective 6:** Improving *commercialization* of energy-related innovation through better access to capital and support for new company formation and expansion.
- **Objective 7:** Sustaining a globally competitive energy economy *workforce*.
- **Objective 8:** Improving *public awareness* within southwestern Pennsylvania about the strength of the region's energy economy in order to promote career awareness among residents and to create conditions for appropriate public policies.

The Energy Alliance will pursue these objectives through a series of working groups made up of representatives from dozens of corporations, universities, nonprofit organizations, and others who participate in the regional energy economy.

IV. Working Group Action Plans

A streamlined structure has been developed to pursue the eight objectives (see Appendix C.) A CEO Leadership Group, with members selected from among the most significant energy-related companies and research institutions in the region, provide policy direction and strategic guidance for the effort.

Individual working groups, made up of representatives from dozens of corporations, universities, nonprofit organizations, and others who participate in the regional energy economy, will pursue agreed-upon milestones that support one or more the eight objectives of the Energy Alliance that will accomplish the mission of creating jobs and attracting investment across a portfolio of energy-related assets, without compromising the region's environment.

The four working groups are:

- Policy and Advocacy
- Marketing Communications
- Innovation and Company Funding
- Project Funding

A. Policy and Advocacy

The Policy and Advocacy Working Group will focus on a collaborative approach to advocacy, recognizing the strength of a cross-sector voice pursuing shared energy policy goals.

The Policy and Advocacy Working Group will achieve the following **milestones** in 2010-2011 to fulfill the Energy Alliance mission:

1. Identify top issues by sector

Compile a white paper that identifies and describes the top priority state and/or federal policy issue(s) for each of the seven strategic energy sectors to develop a shared understanding of the issues facing the Pittsburgh region's energy portfolio.

- *Purpose:* Allow Energy Alliance members to find common ground and advocate most effectively on behalf of the region's energy portfolio.
- *Timing:* 1Q-2Q 2010.

2. Support a comprehensive Marcellus Shale policy package

Develop support for a comprehensive Marcellus Shale policy package that encompasses economics, regulations, and permitting and which makes Pennsylvania a competitive location for drilling while maintaining environmental quality.

- *Purpose:* The Marcellus Shale represents, potentially, a once-in-a-generation opportunity to create energy-related jobs and investment in the Pittsburgh region and across Pennsylvania. The Energy Alliance can provide a voice for the broad energy industry to ensure that this economic opportunity is realized responsibly.
- *Timing:* 2Q 2010-2Q 2011

3. Appropriate classification of “green jobs”

Participate in the current U.S. Department of Labor process to ensure that the appropriate portfolio of energy jobs is included within the proper categories for the Obama Administration’s definition of “green jobs.”

- *Purpose:* The definition of “green jobs” will affect what sectors will be eligible for various kinds of federal funding for job training and other purposes. For example, though not renewable, the nuclear industry produces electricity without carbon emissions.
- *Timing:* 1Q-2Q 2010.

4. Identify shared positions on federal carbon legislation

Prepare for potential federal carbon legislation by exploring potential areas of shared interest within the portfolio of energy sectors represented by the Energy Alliance.

- *Purpose:* Federal carbon legislation, whatever its form, has the potential to dramatically impact energy-related jobs and investment in the region because it affects the operation of all energy sectors through regulations on greenhouse gas emissions, the introduction of new mandates and incentives, and the allocation of allowances. The Pittsburgh region, with its substantial coal and natural gas reserves, has a disproportionate interest in the effects of the enacted legislation on the demand for carbon-based energy sources, and the related jobs and investment.
- *Timing:* 2Q 2010-3Q 2011

5. Produce a statement of shared principles

Develop a statement of shared principles to guide the Policy and Advocacy Working Group in identifying topics upon which to focus (e.g., “*A portfolio approach integrating traditional energy sources; alternative renewable sources; and technology and innovation that improves efficiency and conservation will be necessary to meet the world’s energy needs in the 21st century.*”) Potentially, each Energy Alliance participant organization could be asked to endorse the document.

- *Purpose:* To develop an agreed upon framework for approaching energy-related policies and to maximize the region’s voice in Harrisburg and Washington.
- *Timing:* 2Q-3Q 2010

6. Conduct Educational Opportunities and Issues Roundtables

As opportunities present themselves, the Policy and Advocacy Working Group can convene informational roundtable discussions for Energy Alliance members. The first will take place in 2Q 2010 when RAND presents its analysis of the impact of national alternative energy portfolio standards.

- *Purpose:* Inform the work of the Energy Alliance working groups by disseminating relevant research in the energy field.
- *Timing:* 2Q 2010, and continuing.

7. Pursue advocacy objectives identified by other Energy Alliance working groups

Develop and implement tactics for achieving the objectives of the other three Energy Alliance working groups (the Marketing Communication Working Group, the Project Funding Working Group and the Innovation and Company Funding Working Group).

- *Timing:* Continuing

B. Marketing Communications

The Marketing Communications Working Group will facilitate the promotion of our region as a model diversified energy economy among business decision-makers and talent, emphasizing the abundance of the region's energy resources, our engineering and manufacturing assets, and our capacity for innovation across industries. The strategy to accomplish this consists of a three-point plan with the following elements: 1) supply-chain marketing; 2) an occupational analysis; and 3) a public-awareness campaign.

The Marketing Communications Working Group will achieve the following **milestones** in 2010-2011 to fulfill the Energy Alliance mission:

1. Working through the Pittsburgh Regional Alliance (PRA), the Energy Alliance will help secure seven (7) energy-related expansion, attraction, or retention wins in 2010, and ten (10) wins in 2011.

Supply chain opportunities have been identified in each of the region's seven target energy sectors. Due to resource constraints, immediate attention will focus on supply-chain marketing strategies for three of these sectors (natural gas, nuclear and wind), with the remaining being addressed in future years of the plan:

- Natural Gas – Capitalize on the opportunity presented by the Marcellus Shale to ensure that natural gas supply chain companies looking to locate operations in the Marcellus Shale play do so within the Greater Pittsburgh region, and to encourage existing local companies to participate in the supply chain.
- Nuclear – Leverage Westinghouse's investment in the region to attract members of their supply chain to the region.

- Wind – Identify gaps in the region’s wind energy supply chain and encourage existing regional manufactures to fill them.
- *Purpose:* As global demand for energy increases, there will be a need for more producers of the component parts that supply energy markets. The Pittsburgh region, with its strong advanced manufacturing base, is in a perfect position to expand its reach as a manufacturer of component parts for the energy industry.
- *Timing:* 2Q 2010-4Q 2011

2. Conduct an occupational analysis of energy-related jobs

A comprehensive needs analysis of the region’s energy-related occupations will examine the number and kinds of jobs to be created, skills needed for these occupations, the timeline for job creation, the life cycle of these occupations, and the region’s supply available to meet the projected demand. The study will reveal common occupations and skills sets needed across energy sectors, which will in turn be used in 2011 and beyond to redesign the workforce education system.

- *Purpose:* Developing a data-driven understanding of energy-related job growth and required competencies and skills will provide the appropriate framework – and needed sense of urgency – to effectively realign education and workforce training programs.
- *Timing:* 3Q 2010 - 1Q 2011

3. Design/implement energy opportunity public awareness campaign in Greater Pittsburgh

Design and begin implementation of public awareness campaign intended raise community awareness of the importance of the region’s energy opportunity and the career options it presents.

- *Purpose:* Attitudes toward career opportunities and education, as well as public policy issues, can be positively affected by exposure to fact-based information about the importance of energy to the region’s economy, quality of life, and prosperity.
- *Timing:* Design – 3Q 2010
Implementation – 2011

3a. Conduct a public opinion poll on energy

The poll will gauge the regional population’s current awareness and understanding of the growing energy opportunity and serve as a baseline perception survey for the basis of a broad-based public energy education effort.

- *Purpose:* Establish baseline information that can be used to design an effective awareness campaign and to measure the effectiveness of the campaign.
- *Timing:* 3Q-4Q 2010

3b. Pre-launch public awareness campaign with the opening of CONSOL Energy Arena

Through a partnership with the Pittsburgh Penguins, dedicate a pre-season game to a student audience – offering most of the 18,000 seats for free to post-secondary students enrolled in colleges, career schools and apprenticeship programs. Coupling the game with pre- and post-game activities will reinforce the region as vibrant and headed toward an exciting, energetic future, and will provide an opportunity to disseminate messaging about the energy industry and related career opportunities to a target audience. This project includes the opportunity throughout the season to bring students from high-demand areas (e.g. engineering, quality technicians, electricians, post-grads, etc.) to Penguin practice sessions where the energy industry can present a targeted message about employment opportunities.

- *Purpose:* Serve as an opportunistic pre-launch event for the public-awareness campaign.
- *Timing:* 3Q 2010

4. Track regional progress

Track and regularly report energy-sector investment and energy-sector jobs (direct and indirect) created and retained in Greater Pittsburgh.

- *Purpose:* Assessing progress will provide one indicator of the effectiveness of the Energy Alliance collaboration.
- *Timing:* 2Q 2010, and continuing

5. Creation and maintenance of energy web presence

The web presence will promote Greater Pittsburgh's energy story to a variety of audiences intended to support the Energy Alliance's eight objectives, based on input from all working groups.

- *Purpose:* For example, the website would provide an information source for prospective employees inside and outside the region (to help build a suitable work force); to business decision-makers globally (to attract investment in the region); to companies within the region (to identify new supply-chain opportunities); to policy makers (to build support for an appropriate policy climate); to global media (to promote the benefits of investing in the region); and to the general populace of Greater Pittsburgh (to build career awareness of energy-related opportunities and to build grassroots support for the energy industry.)
- *Timing:* 3Q 2010, and continuing

C. Innovation and Company Funding

The Innovation and Company Funding Working Group will encourage energy innovation and contribute to the success of early-stage energy companies in the Greater Pittsburgh region. Small businesses are at the center of every cluster's ecosystem of innovation. Fledgling companies emerging from the region's energy technology research institutions, national lab

facilities, and leading energy corporations need assistance to cross the chasm between research & development and commercialization. An economy in recession has impeded new company formation. The Energy Alliance will serve as a hub for early-stage energy activities in the region's energy cluster, and will collaborate with partners in the region to promote information flow between cluster members and boost awareness nationally in connection with new energy technology business development.

The Innovation and Company Funding Working Group will achieve the following **milestones** in 2010-2011 to fulfill the Energy Alliance mission:

1. Identify promising areas for research

Provide a forum in which a sharing of ideas can take place around different key energy sectors to identify those pain points where the application of new technology would be particularly valuable. Activities will be coordinated by sector, matching regional commercial players with leading researchers from specific energy sectors with deep domain expertise. Phase One will identify sector-specific industry pain points. Phase Two will facilitate regular reviews with industry and research institutions to refresh pain points and review activities directed at resolving those point points.

- *Purpose:* Linking research activities with specific industry challenges that need to be solved should increase the rate of commercialization.
- *Timing:*
 - Phase One: 2Q-3Q 2010
 - Phase Two: Quarterly

2. Link entrepreneurs and companies

Match talented entrepreneurs with existing market participants to improve the visibility of promising new technology being developed in the region. Phase One will be to organize regional industry participants by energy sector.

- *Purpose:* Facilitate the flow of ideas in the region and increase adoption of technology developed by early-stage companies by providing a forum for novel concepts to be vetted and a network of corporate players with whom to partner.
- *Timing:* 2Q 2010 – 2011

3. Outreach to regional research facilities to maximize value of R&D

Summarize research activity by individual research institution to better leverage the significant investment in energy-related R&D in the region, organizing the information to facilitate sharing with potential investors across the US.

- *Purpose:* Help regional research facilities maximize the value of intellectual property under development.

- *Timing:* 2Q-3Q 2010

4. Provide business assistance to high-potential regional companies and facilitate access to follow-on capital

Provide business assistance to regional energy companies including: helping access technical assistance, fundraising, talent attraction, partnering, marketing & PR, and business planning among other items.

- *Purpose:* Help regional energy companies at all stages of development with fundamental business execution items where possible.
- *Timing:* 2Q-2011

D. Project Funding

The Project Funding Working Group aims to bring the broad resources of the Greater Pittsburgh region together to enhance the amount of funding secured by organizations in the region from local, state and federal sources

The Project Funding Working Group will achieve the following **milestones** in 2010-2011 to fulfill the Energy Alliance mission:

1. Develop and implement funding response mechanism to support regional and individual grant opportunities

Identifying regional resources to respond to funding announcements and supporting existing regional and individual efforts to attain funding through steps including:

- Identifying and organizing funding opportunities from government sources and foundations;
 - Communicating these funding opportunities to regional energy resources;
 - Organizing regional energy resource information in an easily navigable database to share with Energy Alliance members; Supporting applicant efforts through identifying strategic partners, contributing data, reviewing grant proposals, and managing select efforts; and
 - Tracking regional funding requests
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- *Purpose:* Creating a mechanism that allows for more organized and strategic regional responses to funding opportunities should increase the region's win rate.
 - *Timing:* 2Q 2010, and continuing

2. Proactively formulate funding requests

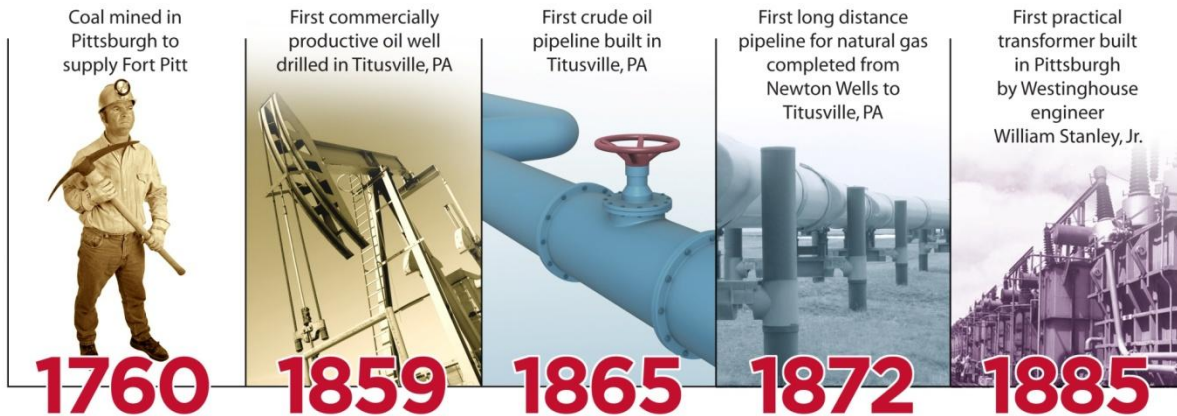
Identify regional strengths and organize regional groups to proactively seek funding from funding sources, including legislators, government agency representatives, foundations, investment groups, and other potential funders.

- *Purpose:* Having the region recognized as a leader in specific energy areas will best position the region to capitalize on future funding opportunities in those areas.
- *Timing:* 2Q-3Q 2010 (Phase One, Identify regional energy innovation priorities)
4Q 2010 (Phase Two, Circulate energy vision to potential funders)

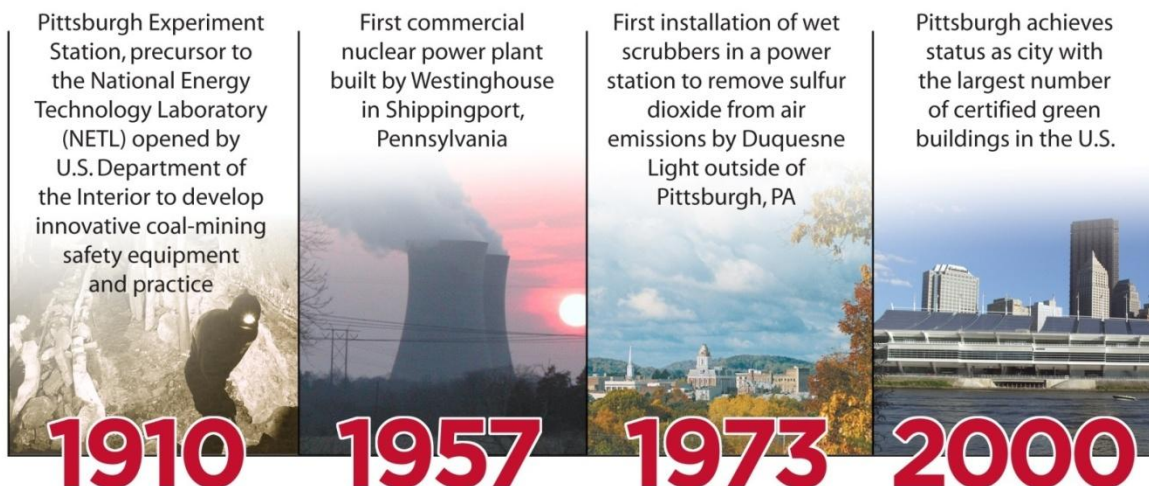
	A. Policy and Advocacy	B. Marketing Communications	C. Innovation and Company Funding	D. Project Funding
Objective 1: Demonstrating need for portfolio approach	<ul style="list-style-type: none"> • Statement of shared principles • Issues roundtables 	<ul style="list-style-type: none"> • Opinion poll • Design awareness campaign • Track regional progress 		
Objective 2: Supporting a broad energy network	<ul style="list-style-type: none"> • Statement of shared principles 	<ul style="list-style-type: none"> • Web presence 	<ul style="list-style-type: none"> • Link entrepreneurs and companies • Outreach to regional R&D 	<ul style="list-style-type: none"> • Regional funding response mechanism
Objective 3: Securing policy changes to support the portfolio approach	<ul style="list-style-type: none"> • Classification of green jobs • Identify top issues by sector • Statement of shared principles • Marcellus shale package • Federal carbon legislation • Support other groups 	<ul style="list-style-type: none"> • Opinion poll • Design awareness campaign 		<ul style="list-style-type: none"> • Funding requests
Objective 4: Increasing energy jobs and investment		<ul style="list-style-type: none"> • PRA wins 	<ul style="list-style-type: none"> • Identify research areas • Link entrepreneurs and companies • Outreach to regional R&D 	<ul style="list-style-type: none"> • Regional funding response mechanism • Funding requests
Objective 5: Improving research and innovation	<ul style="list-style-type: none"> • Classification of green jobs • Support other groups 		<ul style="list-style-type: none"> • Identify research areas • Link entrepreneurs and companies • Outreach to regional R&D 	<ul style="list-style-type: none"> • Regional funding response mechanism • Funding requests
Objective 6: Improving commercialization of energy innovation	<ul style="list-style-type: none"> • Support other groups 		<ul style="list-style-type: none"> • Identify research areas • Link entrepreneurs and companies • Outreach to regional R&D 	<ul style="list-style-type: none"> • Regional funding response mechanism • Funding requests
Objective 7: Creating a competitive energy workforce	<ul style="list-style-type: none"> • Classification of green jobs • Support other groups 	<ul style="list-style-type: none"> • Occupational analysis • Opinion poll • Design awareness campaign • Penguins event • Web presence 		<ul style="list-style-type: none"> • Regional funding response mechanism • Funding requests
Objective 8: Improving public awareness of the energy economy	<ul style="list-style-type: none"> • Issues roundtables 	<ul style="list-style-type: none"> • Occupational analysis • Design awareness campaign • Track regional progress • Penguins event • Web presence 		

Appendix A Pittsburgh's Energy History

The Greater Pittsburgh region has a long history of energy innovation across a portfolio of energy-related sectors. In 1859, the first commercially productive oil well was drilled in Titusville. The same region pioneered the use of pipelines to transport crude oil and natural gas. George Westinghouse and his team, from their home in the Turtle Creek Valley, developed the electrical transmission and distribution vision that we still enjoy today.



The region staked its claim in the new energy source of the 20th century by establishing the first commercial nuclear power plant, which came online in Shippingport in 1957. And the region that was once known as the Smoky City because of the dense concentration of pollution that covered the area was the also the site of the installation of wet scrubbers in a power plant to remove sulfur dioxide from air emissions.

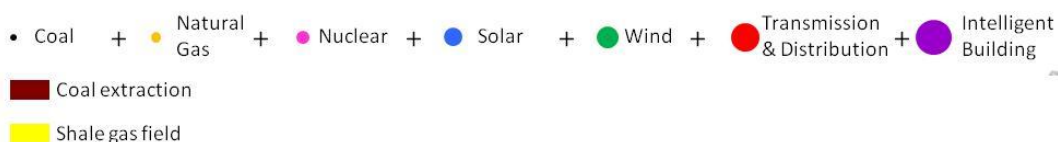
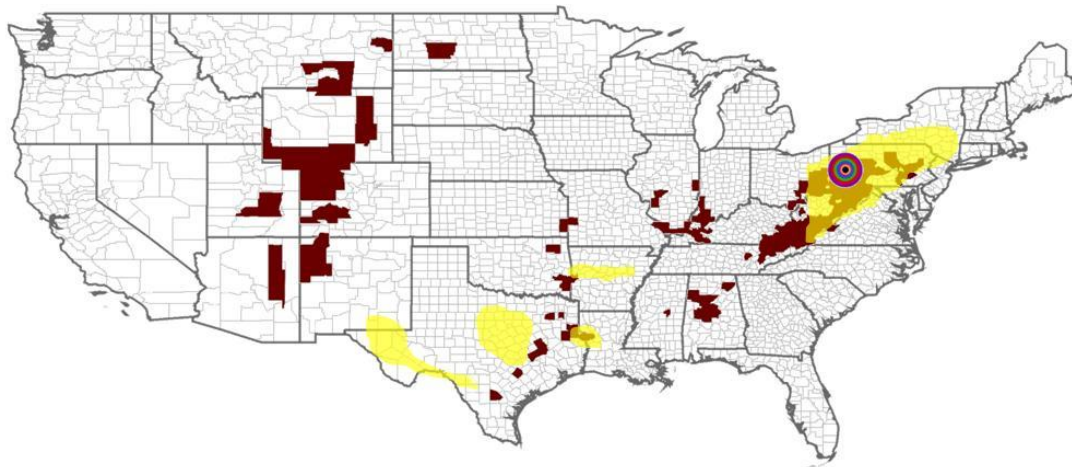


Pittsburgh's Energy Portfolio

The Energy Alliance of Greater Pittsburgh is built around the nexus of natural resources, advanced engineering and manufacturing of energy components, and expertise in energy innovation. The region's energy cluster contributes more than \$13.7 billion to the regional gross domestic product, which accounts for 10% of the regional economy. The energy cluster supports, directly or indirectly, 105,000 jobs. In addition, more than \$1 billion in corporate and government innovation spending flows through the region each year, anchored by such unique assets as the U.S. Department of Energy's National Energy Technology Laboratory–Pittsburgh and the Bettis Atomic Power Laboratory.

Research by the Allegheny Conference on Community Development has identified seven energy sectors where the Pittsburgh region is one of the country's top employers. Those seven sectors represent the spectrum of the energy industry, from traditional sources needed to power the base load of the world's electric generation needs (coal and nuclear) to the natural resources and manufacturing expertise that permit new distributed models of energy generation (natural gas, wind, solar) to the technology needed to conserve and control power use (transmission and distribution components and intelligent building technologies.)

Only three regions in the country are among the top 25 employers in each of those sectors: Pittsburgh, Chicago, and Detroit. And of those, only Pittsburgh sits atop a base of natural resources that will be an essential part of the portfolio needed to address the world's 21st century energy needs. That is why Pittsburgh is The Nation's New Energy Capital.



The region is home to the research and development facilities of the National Energy Technology Laboratory-Pittsburgh (NETL), which is part of the U.S. Department of Energy's national laboratory system. NETL is the only U.S. national laboratory devoted to fossil energy research.

The region also benefits from strong research universities. West Virginia University has the National Research Center for Coal & Energy. Both Carnegie Mellon University and the University of Pittsburgh receive federal funding for research related to clean energy and have begun to collaborate on initiatives related to global energy issues. One result of this collaboration is the Institute for Advanced Energy Solutions (IAES), which involves, among others, researchers from CMU, the University of Pittsburgh, West Virginia University, Penn State, Virginia Tech and NETL.

Appendix B Overview of Pittsburgh's Seven Energy Sectors

Coal: The Pittsburgh region has strong presence in the coal industry. The region produced 51.7 million tons of coal in 2008 – more than all but three states in the US. Pennsylvania is home to the nation's largest mining machinery and equipment manufacturing industry, showcasing strength in the coal supply chain. The Pittsburgh region houses the only major private sector coal R&D facility as well as the National Energy Technology Laboratory, which conducts fossil fuel research.

Natural Gas: The Pittsburgh region sits atop the Marcellus Shale, a promising unconventional natural gas field that is generating significant interest and investment from the private sector. This potential is already beginning to be realized – more than 1000 new wells were drilled in the Pittsburgh region in 2009, and more than a third of these were Marcellus wells. Pittsburgh also already has a high concentration of advanced materials manufacturing, heavy equipment, and chemical firms who use natural gas as a feedstock.

Nuclear: Forty percent of the world's existing reactors are based on technology developed in the Pittsburgh region by Westinghouse. This results in proximate demand for supplies and services in the nuclear supply chain. The Pittsburgh region has a concentration of nuclear engineers, and is the location of the Bettis Atomic Power Laboratory – a major federal nuclear technology laboratory – which, in combination with Bechtel Plant Machinery makes Pittsburgh the home of the nuclear navy.








Solar: The Pittsburgh region's historical strengths in materials development and advanced manufacturing (including glass and chemical manufacturing) ideally position the region to take advantage of emerging supply chain opportunities in the solar sector.

Wind: The Pittsburgh region's historical strengths in materials development and advanced manufacturing (including metals, coatings, machining and electrical components manufacturing) position the region to take advantage of emerging supply chain opportunities in the wind sector

Conservation and Distribution: The Pittsburgh region has a concentration of firms manufacturing electronic systems and components for traditional and alternative energy applications. It is also home to research institutions that are developing the software and business models that will manage the next-generation electricity grid.

Intelligent Building: In addition to being an early adopter of green buildings, the Pittsburgh region has a concentration of manufacturers of the electronic systems and components needed for intelligent building technology applications.

Powering Prosperity - Opportunities in Pittsburgh's Energy Economy

		NATURAL RESOURCES	SUPPLY CHAIN	INNOVATION
TRADITIONAL SECTORS	 COAL	COAL PA ranks sixth in the U.S. in proven coal reserves	COAL High concentration of mining equipment manufacturers and other firms supporting the coal industry	COAL Opportunities to leverage the only fossil fuel national research lab (NETL), only private sector coal R&D firm in the U.S. (CONSOL), and university research (CMU, Pitt, Penn State, WVU)
	 NATURAL GAS	NATURAL GAS Marcellus Shale represents one of the largest new plays in the U.S.; PA has existing natural gas industry ranked 2nd in number of producing gas wells in U.S.	NATURAL GAS Concentration of advanced materials manufacturing, heavy equipment, and chemical firms.	NATURAL GAS Breakthroughs in unconventional drilling combined with continuing improvements to fracturing and water treatment
	 NUCLEAR		NUCLEAR Half of the world's existing reactors based on locally-developed technology, resulting in proximate demand for supplies and services	NUCLEAR On-going innovation in commercial nuclear power and Naval propulsion research creates regional hub for R&D, complemented with very high concentration of nuclear engineers and technicians
ALTERNATIVE SECTORS	 SOLAR		SOLAR Concentration in glass, materials and electrical components position region as preferred supplier	SOLAR Developing cost-competitive solar technology by improving glass and solar components
	 WIND		WIND Concentration of advanced materials manufacturing, coatings, chemicals, and fiberglass firms	WIND On-going materials research to make wind installations more efficient and cost-effective
CONSERVATION & DISTRIBUTION SYSTEMS	 TRANSMISSION & DISTRIBUTION COMPONENTS		T & D COMPONENTS Concentration of electronic systems and components for traditional and alternative energy applications	T & D COMPONENTS Systems integration breakthroughs are the focus of regional research consortium
	 INTELLIGENT BUILDING TECHNOLOGIES		INTELLIGENT BLDG. Concentration of electronic systems and components for building technology applications	INTELLIGENT BLDG. Academic programs for advancing building technologies

Appendix C Energy Alliance Organizational Structure

Energy Alliance Structure

