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Center for Social and Urban Research

ELECTRICITY GENERATION IN PENNSYLVANIA

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Highlights:

- Interview explaining the Human Capital Initiative Project at the University of Pittsburgh.
- Cyclical changes in regional employment in the retail industy.
- Schedule for the release of data from the 2000 Census.
- Role of exports in the regional economy.

Both Pennsylvania and California have implemented fundamental changes in the regulatory structure of their electric utility industries. This unprecedented experiment has been blamed for what may be the most severe energy crisis in a decade in California as electricity prices have risen to new highs over the last several months. Can Pennsylvania expect a similar result in the future? Why has the experience of deregulation in Pennsylvania been so different from that in California? There are some fundamental differences in the electricity generation infrastructures in California and Pennsylvania.

Energy shortages do not necessarily represent a shortage in the amount of energy available. There exists more generating capacity nationally than is needed across the country. The problem is that the energy is not always in the right place at the right time. Unlike many products that can be easily distributed across the country, the distribution of electricity is difficult. Electricity cannot be stored for future use. Electric generation must match its consumption at all points in time. When generation or consumption is out of balance in one region, it must be balanced by

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Largest Users of Electricity by State
Millions of Kilowatt Hours 1998

State	Net Generation*	In-State Retail Sales	Net Difference
California	114,926	223,583	-108,657
Florida	169,447	186,905	-17,458
Ohio	146,448	156,282	-9,834
New York	115,840	131,375	-15,535
Illinois	131,274	130,646	628
Pennsylvania	173,903	127,482	46,421
North Carolina	113,112	113,353	-241
Georgia	108,717	108,445	272
Michigan	85,146	100,373	-15,227

* selected prime mover

Source: Energy Information Administration, Department of Energy

CENSUS 2000 BEGINS RELEASE OF DATA

The Census Bureau began its release of data from the 2000 Decennial Census in December with distribution of state and national population totals. This was only the first step in a release schedule that will continue over the next several years (see schedule of release of Census 2000 data on page 5). Thus far, only the total national population and individual state populations have been released. These initial statistics were released first in order to facilitate the reapportionment of congressional seats as required by the Constitution. Subsequent data releases will include much more detailed information on the demographic composition of the population, including but not limited to its age composition, racial breakdown, and economic and housing characteristics.

In the end, the Decennial Census will produce detailed demographic statistics not only for the U.S. as a whole but for individual states, counties, municipalities, and smaller levels of measurements. The most detailed levels of measurement used by the Census are defined as block groups and tracts. Census tracts usually have between 2,500 and 8,000 residents and provide for a common unit of measurement when comparing the population in different areas.

In the six county Pittsburgh metropolitan area, there were 780 separate Census tracts defined in 1990. Census tracts in urban areas or areas with minimal change in population can remain stable over time, but redefinitions of tract boundaries and an increase in the number of tracts can be expected where population has been growing significantly

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Economic Impact Analysis Part 2: Regional Exports

This is the second part of a series of articles designed to explain some of the techniques and methods used in studying the regional economy. The initial article in the previous edition of the *PEQ* focused on industry multipliers and the effect of new investment in one industry on growth throughout the regional economy. This article will focus on the differences between regional industries in terms of where they sell their products and services. Specifically, the role of regional exports in the growth of the local economy will be explained in greater depth.

A definition is needed to begin the discussion of regional exports. Broadly defined, regional exports are all goods and services shipped out of the region. This is a more general definition than the more common understanding of exports, which refers to international exports. International exports are an important category of sales for regional industries but far more limited than regional exports in total. International exports will be the focus of a future article in this series.

Regional exports are important in understanding the regional economy for several reasons. The ability of local industries to produce goods and services needed across the country provide a source of income that flows into the region. This will be converted into profits for local firms and earnings for local workers. Any region that is to have a high level of local earnings needs to have a strong base of industries that produce regional exports. In a sense, it is a large scale accounting issue as the regional economy must generate income that flows into the region in order for there to be significant accumulation of wealth by both businesses and consumers.

There are many industries that do not produce significant exports yet are important to the local economy. Retail and wholesale trade industries are typical of those that earn most of their revenues within the region. This makes the magnitude of their business dependent on the size and spending patterns of the local population. All essential services and even much of local education services do not produce regional exports of any kind.

Expansion in firms and industries that are strong exporters have distinct and positive benefits to the local economy. Increased exports add to the total net income in the region. This contrasts with the expansion of firms that sell mostly within the local economy, which may shift income within the region but will not increase total income. From a regional perspective, the earnings they produce are a reshuffling of economic activity and do not necessarily increase the size of the regional economy. It is difficult to increase the size of a non-export driven industry without increasing the size of the local population and economic base. Only so many supermarkets, for example, are needed to serve the regional population. An additional supermarket in the region may likely only hasten the closing of another store elsewhere. This displacement effect is significantly smaller for firms which export their products out

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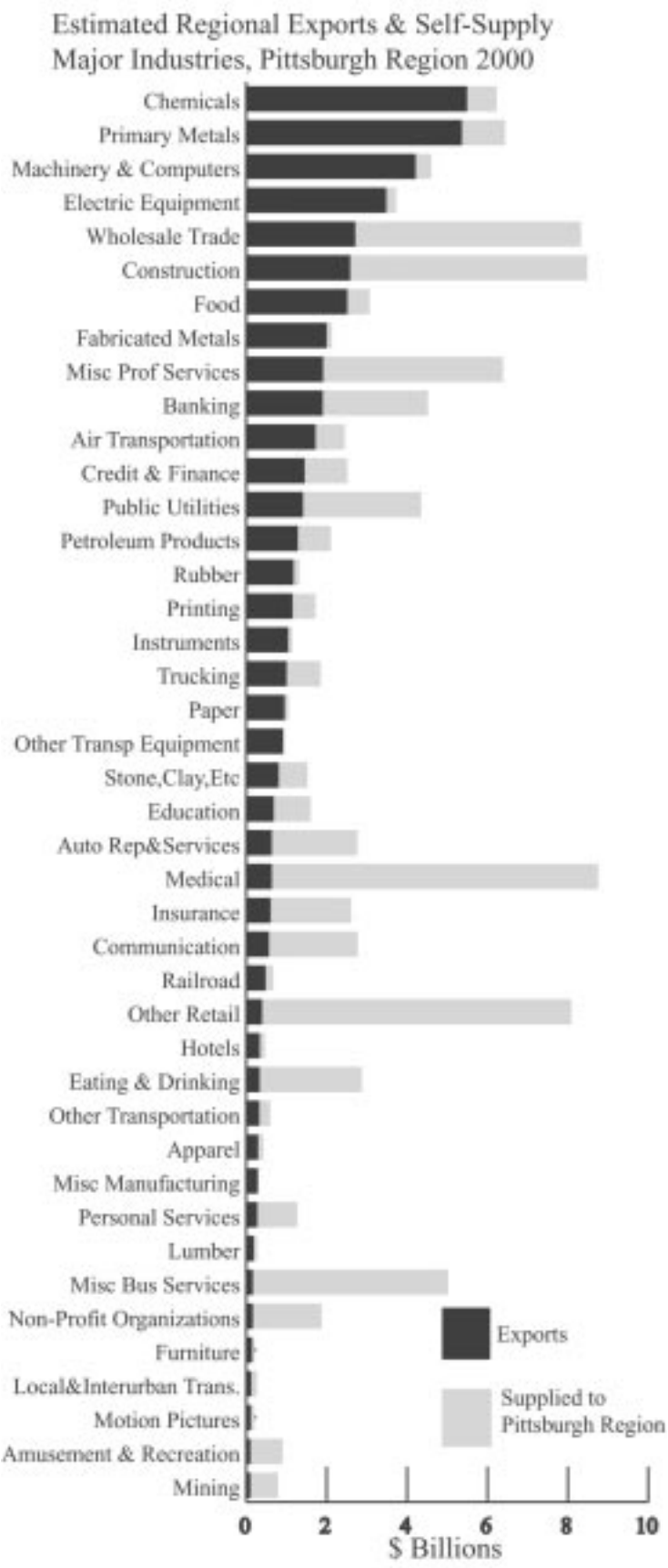


Source: Pittsburgh REMI Model, Center for Social and Urban Research

REGIONAL EXPORTS

Continued from page 2

of the region. An export focused firm in the region can generate new economic activity from a national market.

Typically, all regions have a broad and similar range of industries that do not produce regional exports. The need for supermarkets and primary education is similar across the country. Industries that produce regional exports are far more concentrated in specific regions across the country. Manufacturing industries in particular are far more focused on regional exports and are also more concentrated in particular regions. The steel industry here is a basic example. Its concentration is not for the purpose of selling significant amounts of steel to customers in western Pennsylvania. Instead, steel is shipped to customers around the country, and the income generated by those sales is translated into investments on the part of businesses here and earnings for local workers. This income is then translated into sales and earnings for other local industries.

The size of a local industry does not necessarily have anything to do with how large its regional exports are. The local health care industry is very large, yet only a fraction of it serves patients who come from outside of the region. Education is similar in that most of primary education is for students from within the region. Typically, it is manufacturing firms and certain business service firms that generate the majority of their sales from regional exports. g

Retail Employment Cycle and the Holidays

The holiday season typically results in a temporary expansion of the retail industry in terms of employment and earnings. This annual expansion usually results in an increased total labor force. People are drawn into jobs from the unemployment rolls. At the same time, students and others who are not seeking employment year round work temporarily during the holiday season.

The expansion in retail is focused in a few key sectors with most of the growth coming in apparel and accessory store employment. Modest gains are seen in furniture, general merchandise, and other types of retail stores while eating and drinking establishments, and auto dealers remain fairly flat during the holiday season.

The expansion in retail employment is typically short lived as temporary workers are let go early in the new year.

Nationally, preliminary data indicates that the expansion of retail employment was minimal between October and December 2000. This could represent a lower level of retail spending. It is also possible that the low unemployment levels across the country limited the available labor supply that retailers could draw upon for their seasonal hiring.

The pattern of retail employment is relatively constant across the country. Almost all metropolitan areas have between 15-20% of their regional workforces in the retail sector. Because the retail trade sector is dependent on serving the local population for the most part, its overall growth is limited by the growth of the region as a whole. g

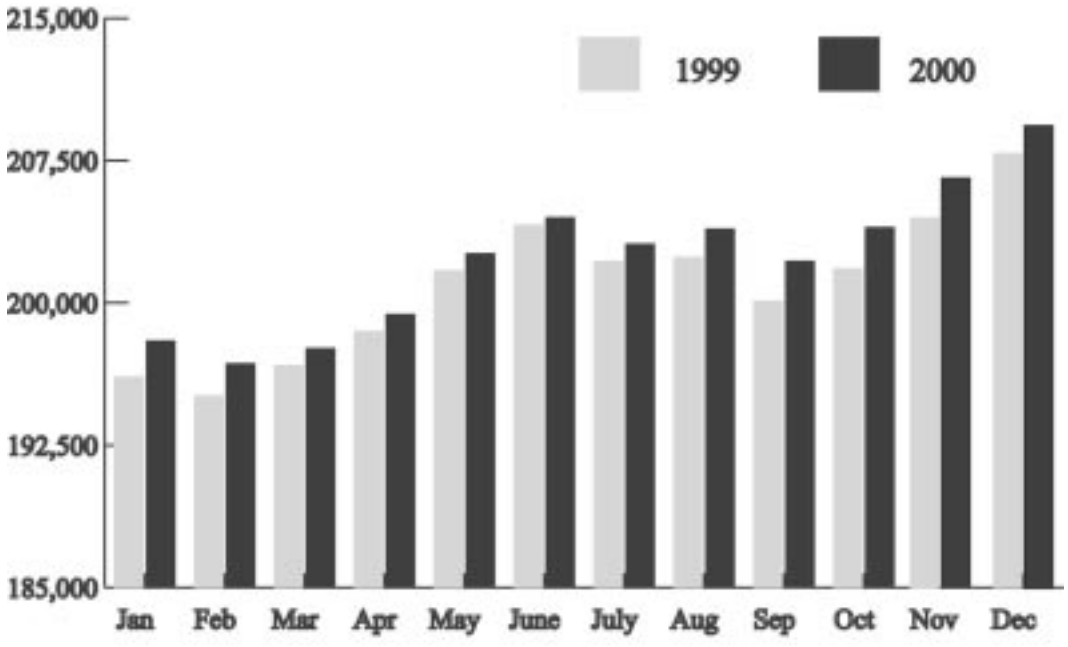
Employment in Retail Industry Subsectors

Holiday Season 2000

Subsector	Oct	Dec$_p$	Change
Auto Dlrs & Svc Stations	20,400	20,300	-100
Eating & Drinking Estabs	70,000	70,000	0
Food Stores	36,700	37,300	+600
Furn, Homefurn, Equip	8,200	8,500	+300
General Merch Stores	24,300	26,200	+1,900
Misc Retail	25,000	26,200	+1,200
Total	203,900	209,300	+5,400

p = preliminary

Retail Employment in the Pittsburgh Region by Month 1999 and 2000



HUMAN CAPITAL POLICY INITIATIVE

An Interview with Anne McCafferty, Project Director of the Institute of Politics' Human Capital Policy Initiative.

Once it was thought that simply attracting new businesses would solve the region's economic problems by creating jobs, a stable tax base, etc. Now we know that economic development goes hand-in-hand with workforce development. We need positive answers to questions such as: Do we have the workers that new businesses need? Do these workers have the skills that new (and old) businesses need?

For the past two years, workforce development has been the primary theme of the Institute of Politics (IOP) Annual Elected Officials Retreat. As a result, the IOP Human Capital Policy Initiative (HCPI) was developed. HCPI aims to enhance the base of information among policymak-ers, particularly locally elected public officials, regarding workforce development. The objectives of the HCPI are:

-To build and share knowledge regarding the status of the workforce, the availability of labor, and the needs of businesses.

-To identify what all of the stakeholders—policymakers, employers, employees, and private citizens—can do together to build the competitiveness of the regional workforce.

She recently answered some questions about the new project.

What is the idea behind the Human Capital Policy Initiative?

HCPI is a communications effort to reach out to the various constituencies who have direct and indirect relationships with workforce development issues. The goal is to present information on the changing nature of the economy, the transformation of work, and the dynamics of the demographics that influence the market at the local level.

Traditionally, workforce development has not always been high on the priority list for government officials, yet human capital is increasingly playing an important role in attracting new business investment to the area. Therefore, we are targeting elected officials in the nine-county region of Western Pennsylvania most prominently.

Would you tell us more about the emerging importance of human capital?

I think that we must look at our area's investment in human capital as a tool for attracting businesses to this area. We need to ensure that our workforce has the skills and knowledge that will enable us to encourage businesses to operate here. Awareness of workforce development issues needs to increase so we can have informed public dialogue.

What are some of the most pressing concerns that you have found among the various stakeholders that you have been meeting?

The concerns vary depending on the stakeholder. Business owners have an interest in addressing the skilled labor shortage and recruiting and retaining workers with appropriate skills. Policymakers are concerned with the allocation and quality of job training resources for those entering the workforce, as well as for incumbent workers needing to upgrade their skills. Workers are concerned about the quality of their work life, and the rapid economic shifts that the global economy projects on a very local level. We are now in an era when a lifetime of new learning is needed for a lifetime of work.

What I have heard the most though is that the workforce, businesses, and employers do not recognize political boundaries when it comes to workforce development. The concept is simply a non-starter. Yet these political boundaries can present formidable obstacles to starting and growing a business. Issues such as public transportation, economic development supports, and zoning regulations are managed discreetly and differently from county to county, and often from township to township. By using systems thinking and reinventing our "boundaries" as regional ones, we can begin to tackle these issues more effectively. How we define the problem has a significant influence on which problem we actually solve.

All of these views blend into a rich tapestry in which important commonalities exist. One commonality is the recognition that regional planning and regional development efforts are interdependent. Businesses need an environment where they can survive, adapt, and grow. Individuals and families want urban amenities and economic opportunities that a healthy economy can offer. New businesses want all of the above plus a skilled workforce with a strong work ethic. In short, we all agree that a thriving economic ecosystem serves our multiple interests. The trick is coalescing our collective resources to get there and agreeing on the "best" road map for the trip.

How do you intend to accomplish your mission?

I have been meeting with a variety of stakeholders including businessmen and women, elected officials, and other civic leaders to elicit the particular knowledge and data that they think needs to be shared among all of the groups. HCPI will provide a forum that will bring together all of these stakeholders and give them the opportunity to educate one another about their needs. Also, we will present objective data regarding labor and workforce development. We need to start taking advantage of the wonderful information and brilliant creative people that we have in this issue area.

How will these forums be organized?

We would like to present this information in small geographic clusters around the region. Presentations to such small groups will allow us to do two things. First, individuals will have an easier time asking questions, giving comments, and benefiting overall from the intimate discussion. Second, we will be able to include a focus on issues that concern an area the most. For example, issues faced by Butler, Armstrong, and Indiana counties may be different from those faced by Fayette or Westmoreland counties.

We hope that objective information will help elected officials better understand the is-

sues of workforce development for their particular area. We hope that this understanding will then inform their analysis as they make important economic development and social policy decisions. Finally, these small seminars should help leaders ask themselves more routinely: How do my decisions about transportation, fiscal issues, etc. impact work-force development? All of these factors affect the workforce. g

Anne McCafferty has been chosen to lead the Human Capital Policy Initiative Project. She comes to the Institute of Politics at the University of Pittsburgh with a long history of experience in workforce development, project management, and community organizing. As former manager of Pittsburgh Partnership, the City of Pittsburgh's employment and training division, McCafferty recognizes the complexity of workforce development issues and the challenges inherent in raising these issues to a higher level on the public policy agenda. She can be reached at 412-624-7731.

CENSUS 2000 BEGINS RELEASE

Continued from page 1

since the last Census.

The Census conducts many other data collection surveys throughout the decade, but the Decennial Census is the most complete enumeration of the population. Estimates of the population are calculated throughout the intervening years; however, with the full data available only once a decade, errors can creep into those estimates. Greater errors can be expected in some estimations toward the end of the decade as the length of time from the last Decennial Census increases.

Specific information is available on a monthly basis from the Current Population Survey conducted by the Census. This is a fairly large sample survey of the national population but can only provide a limited view of changes in the local population.

Data will be made available from the Census Bureau in many forms. Much of the data can be obtained from their web site at: www.census.gov. Detailed data will also be made available in electronic formats including CD-ROM and DVD. The Census Bureau will also release detailed reports to accompany the data on a wide range of topics.

As data becomes available, more information can be obtained from the Center for Social and Urban Research at the University of Pittsburgh, which is a local affiliate of the Pennsylvania State Data Center. The University of Pittsburgh's Hillman Library is also a repository of government publications for the current and historical censuses. g

Scheduled Release of Selected Census 2000 Data Products

Date	Data	Description
Mar - Apr 2001	Census 2000 Redistricting Data Summary File	State population counts for legislative redistricting.
Jun - Sep 2001	Demographic Profile	Population totals and selected population and housing characteristics in a single table for tracts/places.
Jun - Sep 2001	Congressional District Demographic Profile	Population totals and selected population and housing characteristics for Congressional Districts of the 106th Congress only.
Jul 2001	Race and Hispanic or Latino Summary File	
Jun - Sep 2001	Summary File 1 for States	Population counts for 63 race categories
Nov - Dec 2001	Summary File 1 for U.S. (advance)	including Hispanic and Lationo groups and
May - Jun 2002	Summary File 1 for U.S. (final)	selected population and housing characteristics.
Jun - Sep 2002	Summary File 2	Population and housing characteristics for many detailed race and Hispanic or Latino categories.
2002	1 % Public Use Micro-data Sample (PUMS)	
Oct 2002-Feb 2003	Summary File 4	Population and housing characteristics for many detailed race and ancestry groups.
2003	Population and Housing Unit Totals	
2003	5-percent sample Micro-data Sample (PUMS)	
2003	Congressional District Data Summary File	Data on the remapped *108th* Congress

Source: Bureau of the Census

ELECTRICITY GENERATION

Continued from page 1

electricity shipped from elsewhere in the country.

The national power grid exists for the distribution of electricity across long distances, but the loss of energy that occurs in moving electricity can be significant. The most profitable customer for an electric utility is one closest to the plant that generates the electricity.

Power companies are able to purchase and share electricity across state lines via transmission networks that cross the country. There are three main transmission networks that allow for the distribution of wholesale electric power. The Eastern and Western Interconnects separate the country roughly in half and a third Interconnect serves the bulk of Texas by itself.

The expansion of wholesale trading of electricity and increased deregulation across the country has spawned new organizations for the marketing of electricity. Five of these new non-profit institutions, called Independent System Operators (ISOs) are in operation to facilitate the trading and transmission of electric power across regions. A sixth ISO is close to becoming operational, and several more are in the planning phases. Most ISOs are multi-state operations; however, the California ISO serves only California.

The eastern part of Pennsylvania is served by the Pennsylvania-New Jersey-Maryland (PJM) ISO. Western Pennsylvania does not yet belong to a similar organization for the sharing of power, which can be a source of concern as the reliance on wholesale power from outside of the region increases. Options for local power utilities would be to join the existing PJM ISO or the Midwest ISO, which will be operational in the near future.

Pennsylvania has a significant amount of electric generation capacity compared to California. Despite having a population over 2.5 times larger than Pennsylvania, California power plants generate 35 percent less electricity. California is much more dependent upon electricity generated outside of its borders with an annual in-state generating capacity of 112,183 million kilowatt (mKWH) hours, feeding an in-state demand of 223,583 mKWH in 1998. For Pennsylvania, the ratio is reversed, with 173,903 mKWH generated in 1998, feeding a local demand of 127,482 mKWH. Pennsylvania is also in close proximity to West Virginia, which also has a large amount of generation capacity in excess of its own needs.

The excess generation capacity in the region is both a blessing and a curse. Electric plants are built to last for decades, and the generation capacity in the Pittsburgh region was built to supply a growing local steel industry that did not materialize. The boom of World War II and afterward had heightened the demand and profitability of local electric utilities, which prompted their expansion.

Duquesne Light, a major local electric utility in the 1940s, had strong financial returns through the late 1940s and early 1950s. It was this profitability that allowed it to make the most generous bid for the then nascent Atomic Energy Commission proposal to build and run a commercial nuclear power plant at Shippingport in 1957, which was to become the first such plant. Continued growth in the demand for electricity through the 1960s prompted the utility to begin building additional nuclear power plants in Beaver Valley toward the end of that decade. The investment in the Beaver Valley nuclear power plants would cost a then unprecedented $647 million. This is just one example of the large scale fixed costs that would be recouped from local electricity customers in the following decades.

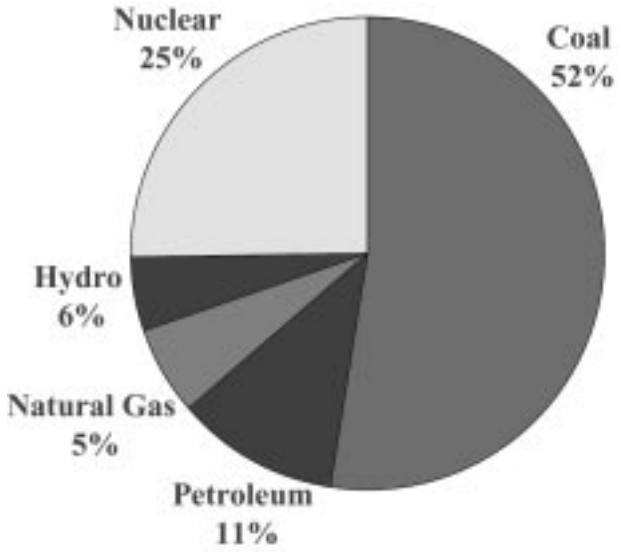
The resulting excess capacity and the fixed costs it incurred for local utilities resulted in higher costs for electricity here and contributed to an uncompetitive business climate. In 1998, the average cost per kilowatt hour of electricity was 7.7 cents in Pennsylvania, over

States with Highest Electricity Costs
Per Kilowatt Hour, 1998

State	All	Residential	Industrial
New Hampshire	11.8	13.7	9.3
Hawaii	11.5	13.8	9.4
New York	10.7	13.7	5.0
Connecticut	10.3	11.9	7.6
New Jersey	10.2	11.6	7.8
Vermont	9.9	11.7	7.1
Alaska	9.9	11.5	7.3
Maine	9.7	12.9	6.4
Rhode Island	9.7	11.1	7.8
Massachusetts	9.5	10.5	8.1
California	9.0	10.5	6.3
Pennsylvania	7.7	9.7	5.6
U.S. Average	6.8	8.3	4.5

Source: Energy Information Administration, Department of Energy

Fuel Sources of Pennsylvania Electricity by Plant, 1998



Source: Energy Information Administration, Department of Energy

15% higher than the national average of 6.65 cents. Industrial power, a more important factor in industrial location decisions, cost 5.6 cents per kilowatt hour, which was over 24% higher than the national average of 4.5 cents. In 1995, a study at the University of Pittsburgh estimated that a 15% reduction in local electricity prices would generate at least 1,000 new jobs in the region because of the improved competitive position such prices would give the region. Even new steel plants built in the U.S. in recent decades have usually been electricity intensive mini-mills, which have been more likely to be built in low energy cost regions instead of near Pittsburgh.

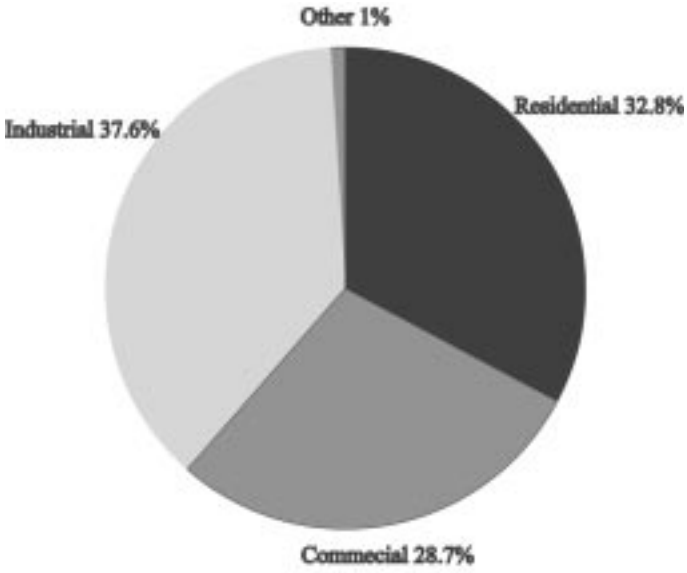
Pennsylvania's electricity is generated from a mix of sources. Fifty two percent of Pennsylvania's electricity plants are fueled by coal, which has a less volatile price than that of crude oil. Another 25% are fueled by nuclear power, and only 10% use petroleum. The use of petroleum has actually been decreasing over the last decade, and the use of coal has been relatively flat. Power generated by natural gas sources has shown the most rapid growth over the last decade, increasing at an annual rate of over 10% between 1988 and 1998. The output from nuclear plants showed annual growth of just under 5% over the same time frame. Electricity generated by hydroelectric sources went up by over 8% annually during that decade, but it still remains only a minor source of energy in the state.

The Department of Energy counts 230 power plants in Pennsylvania, and their output is anticipated to be adequate for the near future.

Deregulation has allowed users of electricity to purchase electricity from more than just a sole supplier. This has had the effect of breaking apart the traditional electric utilities into the generation of wholesale electricity and delivery of electric service. Duquesne Light sold its electricity generation plants in the region. In 2000, they sold six plants to Orion Power Company, three in Pennsylvania and three in Ohio. West Penn Power Company has similarly divested itself from production and sold five plants to Allegheny Energy Supply early in 2000. The current transition phase of deregulation in the Pennsylvania power industry includes caps on rates that can be charged to residential customers. A completely deregulated industry will allow for variable prices at both the retail and wholesale level of production. Industrial customers already are offered variable pricing. The cost of energy during low peak times is offered at a substantial discount. It is expected that similar price variability will extend to residential customers at some point in the future.

Only a fraction of electricity sold in Pennsylvania is used by residential customers. Two-thirds of all electricity sold by utilities are delivered to industrial and commercial customers.

Pennsylvania Electric Utility, Retail Sales by Sector, 1998



Source: Energy Information Administration, Department of Energy

Electric Power Industry Generation of Electricity by Primary Energy Source, 1988, 1993, and 1998
(Megawatt Hours)

				Annual Growth	Percentage Share		
	1988	1993	1998	Rate 1988-98	1988	1993	1998
Total Utility	152,932,451	166,200,686	173,903,236	1.3	92.6	91.7	91
Coal	106,238,865	100,390,066	106,516,740	0	64.3	55.4	55.7
Petroleum	7,915,427	4,559,186	4,097,006	-6.4	4.8	2.5	2.1
Gas	211,139	796,697	572,172	10.5	0.1	0.4	0.3
Nuclear	37,862,331	59,330,534	61,149,224	4.9	22.9	32.7	32
Hydroelectric	704,690	1,124,203	1,568,094	8.3	0.4	0.6	0.8
Total Nonutility	12,285,099	14,981,051	17,230,796	3.4	7.4	8.3	9.0
Industry	165,217,551	181,181,737	191,134,032	1.5	100	100	100

Source: Energy Information Administration, Department of Energy

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