



Deregulation of Electricity Generation in Pennsylvania – 2009 Update H 84
Part 1. The Legislation and the Implementation

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Deregulation of electricity generation in Pennsylvania was approved by the PA General Assembly in December 1996. The primary impetus for the legislation was to open the electric industry to competition, thereby enabling PA residents, institutions, businesses, and industries to buy electricity at lower costs. Originally the deregulation was to be completed statewide by January 1, 2001. There have been numerous delays in this arduous process. Now the anticipated deadline for completion throughout the state is December 31, 2010 for all investor-owned utility companies. Rural electric cooperatives and municipal-operated utility companies are exempted from this legislation.

Electricity rate caps (or price controls) were implemented by PA Public Utility Commission (PUC) to ensure relative price stability during the potentially tumultuous years leading to the complete deregulation of electricity generation. The price of electricity has changed relatively little since 1996 with annual increases ranging from 0 to about 5%, as compared to the prices of other sources of energy which skyrocketed. During this same period, customers were required to pay each month the tangible and intangible transition fees (also known as stranded investment fees) to compensate the utility companies as they make the transition to the deregulated business environment.

Additional legislative actions were implemented to enhance the successfulness of deregulation of electricity generation. The Alternative Energy Portfolio Standard (AEPS) in PA has tremendous impact on how electricity will be generated in the future, with a mandated larger share coming from

renewable and alternative sources. Act 129 of 2008 will spur energy conservation and demand reduction practices throughout the state.

What is Deregulation?

To fully understand the deregulation of electricity generation, we must first have a clear understanding of the terms generation, transmission, distribution, electric distribution company and electric generation supplier.

Generation is simply the production of electricity at a power plant. Generation capacity is the maximum amount of electrical power that a power plant is able to produce, usually expressed in units of megaWatts (mW). Electricity can be generated from many different energy sources such as coal, nuclear power, hydropower, biomass, solar, and wind. In Pennsylvania, approximately 60% of electricity is generated from coal and 30% from nuclear energy. The remaining 10% is generated from hydropower, natural gas, and renewable energy sources.

Transmission is the transport of high voltage electricity from the generation plant to distribution substations. The transmission of the high voltage electricity is regulated by FERC (Federal Energy Regulatory Commission) and this federal regulation is likely to continue for a long time.

Distribution is the local part of the electricity system including substations to transform voltages to lower levels



and the delivery (via overhead wires and/or underground wires) to the end-use customers. Distribution also includes the services of maintaining the electricity lines, restoring electricity after storms and accidents, and providing customer services including billing and financial assistance to low-income customers. These distribution services will continue to be provided by your electric distribution company and will continue to be regulated by the PA PUC.

Electric Distribution Company (EDC) is the company that owns, operates, and maintains the power lines and equipment necessary to deliver the purchased electricity from the transmission lines to the individual customers. Each EDC is also responsible for customer services including billing. Be sure to contact your EDC to determine if your EDC will be responsible for the transmission of your electricity or whether transmission will be the responsibility of each supplier serving the EDC territory.

Electric Generation Supplier (EGS) is a person, corporation, broker, marketer, aggregator, or any other business entity that sells electricity to customers. Your EGS is responsible for delivering your amount of electricity to the grid; your EDC is responsible for the distribution of your electricity.

What Changes with Deregulation?

Deregulation of electricity generation means the generation portion of electricity service will be open to competition. You will need to verify with your EDC if the company will continue to be responsible for transmission or whether your selected electricity supplier is responsible for transmission. It is anticipated that for most of the EDCs in PA, your selected supplier of generated electricity will be responsible for both the generation and the transmission of your electricity service.

The rate caps for electricity that have kept electricity prices fairly low will expire when the deregulation of electricity generation is completed at the end of 2010. The customer's responsibility to pay the transition fees also expires at the same time, thus completing deregulation of electricity generation. Then what?

Each customer will have the opportunity to shop for a supplier of generated electricity. Generated electricity will become a commodity that can be purchased from any licensed supplier or broker that you choose. Whenever considering generated electricity, think in terms of both energy in kilo-Watt-hours (kWh) and capacity or power in kilo-Watts (kW). If a customer opts not to shop for an electricity supplier, then the EDC will serve as the default service supplier or the POLR (provider of last resort).

When you select a licensed electricity supplier, just where will your electricity come from after deregulation

is completed? It will come from the PJM grid just as it always has. The PJM grid is a large independent system operator that manages the regional transmission system for 13 states in the Northeast and Midwest, including most of Pennsylvania. Even if you select a supplier of "green" electricity, the electricity will still come from the same grid. Your selected supplier is responsible for supplying the grid with the electricity that you need. If for whatever reason your supplier cannot deliver the necessary amount of electricity to the grid, then your EDC – as your default supplier – will provide the electricity to the grid at its prevailing price. It doesn't matter which company you select as your supplier of generated electricity; you will always remain a customer of your EDC for distribution services.

There will be numerous changes in the rate tariffs of your electricity starting in 2010 for PPL customers and 2011 for customers of the other large EDCs in the state. Familiar rate features will likely be eliminated for generated electricity (energy and capacity), although many of these rate features may be retained for the distribution charges. It is anticipated that on-peak and off-peak rates for electricity usage will become more prevalent. It is also likely that real-time pricing (hourly rates) and day-ahead real-time pricing will become available, especially for commercial and industrial customers.

Other PA Legislation Impacting Electricity Generation and Use

Alternative Energy Portfolio Standard

The Pennsylvania Alternative Energy Portfolio Standard (AEPS) was signed into law in November, 2004. The AEPS law requires that EDCs include at least 18% of electricity from alternative resources in the electricity that they distribute to Pennsylvania consumers by 2021. The levels of alternative energy required gradually increases to the target levels according to the schedule as shown in the table below.



Mandated Completion Date	Minimum AEPS Requirements Percent of Total Electricity Sales		
	Tier 1 Total	Solar PV	Tier II
5/31/2009	2.00%	0.0063%	4.20%
5/31/2012	3.50%	0.0325%	6.20%
5/31/2015	5.00%	0.1440%	6.20%
5/31/2018	6.50%	0.3400%	8.20%
5/31/2021	8.00%	0.5000%	10.00%

The law generally does not mandate which resources must be utilized and in what quantities; however, certain minimum thresholds must be met. By 2021, Tier 1 resources combined must provide at least 7.5% of electricity generated, with an additional minimum 0.5% from solar

photovoltaic (PV) resources. A minimum of 10% must be derived from energy resources in Tier 2.

The types of alternative energy resources for the two tiers are:

Tier 1 - Energy derived from

- Solar photovoltaic energy
- Solar thermal
- Wind power
- Low-impact hydropower
- Geothermal energy
- Biologically derived methane gas (including landfill gas)
- Fuel cells
- Biomass energy
- Coal mine methane

Tier 2 - Energy derived from:

- Waste coal
- Distributed generation systems
- Demand-side management
- Large-scale hydropower
- Municipal solid waste
- By-products of the pulping process and wood
- Coal gasification technology

Meeting Tier 2 requirement can be more easily accomplished by the Pennsylvania utilities and other power suppliers with existing resources, especially waste coal. Therefore many of the environmental issues associated with the waste coal piles throughout the Commonwealth will be addressed as well. However, meeting the Tier 1 requirements involving the renewable energy resources and the solar photovoltaic resource will be more challenging.

Act 129 of 2008. Act 129 requires each of PA's seven electric distribution companies serving at least 100,000 customers (Allegheny Power, Duquesne Light, Met Ed, PECO, Penelec, Penn Power and PPL) to reduce the electricity consumption of their customers by 1% by May 31, 2011 and by 3% by May 31, 2013. (A 1% reduction in electricity consumption in PA is equivalent to a reduction of about 10 million kWh of electricity.) These consumption reductions are especially significant when one realizes that electricity consumption has been increasing annually by about 1.5% in recent years in PA. In addition, each of the seven companies will be required to reduce peak demand in its territory in each customer class by 4.5% by May 31, 2013. To meet these requirements, the EDCs will be offering various incentives and services to enable their

residential, commercial and industrial customers to achieve the mandated reductions in electricity consumption and demand.

The Act 129 plan of each EDC must include specific energy efficiency measures for households at or below 150% of the federal poverty income guidelines. The number of measures shall be proportional to those households' share of the total energy usage in the service territory.

Subsequent phases of Act 129 implementation process will address: EDCs as default electricity suppliers, conservation service providers, advanced metering infrastructure (AMI) or "smart" meter, time-of-use rates, real-time pricing plans, default service procurement, market misconduct, alternative energy sources, and cost recovery. Each electric consumer is to be equipped with a smart meter within 15 years. It is anticipated that Act 129 will entice Pennsylvanians to use energy in a more efficient manner, save money, and lower greenhouse gas emissions.

Summary

The basic rules of the deregulation of electricity generation are:

1. Each customer will have the opportunity to purchase electricity from a licensed electric generation supplier or broker. If no supplier or broker is selected, then the customer's EDC will serve as the default supplier or the POLR (provider of last resort).
2. Each customer's electricity will come from the PJM grid, a large independent system that manages the transmission of electricity for nearly all of PA, plus 12 other states in the Northeast and Midwest.
3. Distribution services (substations transforming electricity to lower voltages, delivery, line maintenance and repair, billing, customer service, and financial assistance for low-income customers) will continue to be provided by the EDC. All distribution services and charges for the services will continue to be regulated by the PA PUC.
4. None of the EDCs in PA is allowed to own or operate any generation facilities.
5. Even though none of the EDCs is allowed to own or operate any facilities to generate electricity, each EDC will make the necessary arrangements to serve as the default supplier for those customers who do not select an electricity supplier. The price that the EDC will charge for the electricity is not regulated by the PA PUC; however, the process by which the EDC contracts for the generated electricity is regulated by the PA PUC.

6. There is to be a “firewall” of separation between each EDC and any of its sister or parent organizations that are involved with the generation of electricity.
7. Electricity cannot be purchased directly from an electricity generation company. Suppliers and brokers serve as the “middle men” between the generation companies and the ultimate consumers of electricity.
8. Each electricity supplier must be licensed by the PA PUC to ensure that each supplier has both the technical and financial wherewithal to supply the electrical energy and power needed by their customers. Brokers of electricity will not be required to be licensed.
9. If a customer’s selected supplier is ever unable to deliver the electricity needed by the customer, then the customer’s EDC will serve as the default supplier at the EDC’s prevailing rate for the electricity.
10. The quality and promptness of the maintenance and repair services provided by the EDC shall not be influenced by whether the customer selected a supplier of electricity or is receiving default service through the EDC.

Additional Resources

See "*Shopping for an Electric Generation Supplier, Part 2 of Deregulation of Electricity Generation*. Click on www.abe.psu.edu/extension/factsheets/h/energyindex.htm to access this and other energy-related factsheets on:

Deregulation of Electricity Generation in Pennsylvania – 1998, H-77
Burning Shelled Corn – A Renewable Fuel Source, H-78
Biodiesel: A Renewable, Domestic Energy Resource, H-79
Making You Own Biodiesel: Brief Procedures and Safety Precautions, H-80
Conversion Factors for English and SI (Metric) Units, H-81
Biomass Energy, H-82
Performing Energy Calculations, H-83

A comprehensive source of information on all issues involving public utilities (electricity, natural gas, telecommunications, water and transportation) in Pennsylvania is available at the PA Public Utility Commission’s web site <http://www.puc.state.pa.us>

For more information on other agricultural and biological engineering topics, visit our website: www.abe.psu.edu

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