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College of Agricultural Sciences Cooperative Extension

Agricultural and Biological Engineering

Deregulation of Electricity Generation in Pennsylvania – 2009 Update
Part 2. Shopping for an Electric Generation Supplier

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The deregulation of electricity generation in Pennsylvania enables an electricity customer to select a supplier of electricity. The only exceptions are customers of municipal utility companies and rural electric cooperatives in the state. At this time, a selection option is not available to them. It doesn't matter which supplier is selected to provide for the generation and transmission of the electricity that is purchased; each customer's electricity will still be distributed by the designated local utility company serving the customer's area. Each local utility company – the Electric Distribution Company (EDC) – will continue to be responsible for maintaining electricity lines, restoring electricity after storms and accidents, and providing customer services including billing and financial assistance to low-income customers. See Part 1 of this fact sheet series *Deregulation of Electricity Generation in Pennsylvania—The Legislation and Implementation* for the history and basic rules of deregulation.

Prepare to Shop for Your Electricity Supplier

Begin now to become better informed of options that are already available and will become even more available when the generation of electricity is completely deregulated throughout the state. Deregulation will be completed by January 1, 2010 in the service territory of PPL Electric Utilities; the deadline for completion of deregulation in the service territories of other large utility companies is January 1, 2011. Deregulation of electricity generation may already be completed in the service territory where you reside. If there is any doubt concerning the status of deregulation in your area, contact your EDC.

Take advantage of the lead time that you do have to prepare for the deregulation of electricity generation. Complete the steps below before shopping for an electricity generation supplier.

- Document how much electricity you use and when you use the electricity. Data included on your electricity bills provide much of this information.
- Identify your major uses of electricity. In other words, identify your "electricity hogs."
- Make sure that you know the time periods for on-peak and off-peak electricity if available in your area. If available, consider how you could modify your load profile by shifting electricity usage to off-peak periods.
- Estimate your costs of electricity for various major residential uses, such as heating, air conditioning, laundering and water heating.
- Calculate the cost of electricity as a percentage of total production or service costs of your business. For example, if your company is manufacturing widgets, calculate the cost of electricity per widget produced. If you operate a commercial venture, calculate the cost of electricity per customer served and per dollar revenue generated. If you are a farmer, calculate the cost of electricity to produce 100 pounds of milk, a dozen of eggs, or a bushel of fruit.
- Consider the total costs of any alternative forms of energy, including costs for installation, maintenance and operation. For example, if you

are interested in switching from an electric water heater to a natural gas-fired water heater, do not limit the analysis just to comparing prices of electricity and natural gas. Also include in your analysis the costs for the purchase and installation of the new water heater and the installation of the gas service line and exhaust system.

After you have carefully documented how and when you use electricity, then you will be better prepared to select the most appropriate electricity generation supplier to meet your needs.

Who Are the Licensed Suppliers of Electricity?

The PA PUC maintains an up-to-date list of all licensed suppliers of electricity at http://www.puc.state.pa.us/utilitychoice/listofsupp.aspx?ut=ec Suppliers are identified for residential customers and commercial/industrial customers for each EDC in the state. Check the list frequently since changes are quite common.

Questions to Ask the Suppliers

A list of 12 pertinent questions to ask a supplier is provided below. It is not necessary to ask each and every question, depending on your interests and desires. For example, if you are not interested in "green" electricity, then there is no point in asking about that issue. *Questions preceded by an asterisk (*) are intended primarily for commercial and industrial customers of electricity.*

1. How much will generated electricity cost per kWh? *Is there a demand charge per kW? *Are there any load factor and/or power factor penalties?
2. Is there an option for on-peak/off-peak rates? If so, what are the rates? What are the on-peak and off-peak periods? Are real-time hourly rates and day-ahead real-time hourly rates available?
3. Do the quoted prices for electricity include the transmission charges? Contact your EDC to verify if your EDC will be responsible for the transmission or if transmission will be each supplier's responsibility.
4. *Who will handle the arrangements to get the interruptible and curtailment credits?
5. Are there any additional charges such as origination fee, minimum monthly charge, service charge, or termination fee?
6. Will I be able to access real-time data of my electricity usage? Will a special meter be required? If so, what are the charges for the meter?
7. Do I have the option of one combined monthly bill or separate bills for generation and all the other charges? Can I have my multiple electricity accounts combined on one itemized bill?
8. What is the length of the contract period? What is the penalty for early termination? Under what circumstances can the supplier terminate the contract?
9. What are the benefits of joining with others for an aggregated group purchase? What are the characteristics of a desirable aggregated group?
10. How can I make my electricity account more attractive to get more desirable terms?
11. Is "green" electricity available? If so, what is the source (solar, wind, biomass, geothermal, hydropower) and what is the price?
12. What additional goods and services can be provided, such as heating fuels, HVAC equipment and maintenance, on-site generation equipment and maintenance, energy efficiency consulting services and financing?

Scrutinize all claims and offers from suppliers that sound "too good to be true." Worksheets for residential customers can be downloaded at http://Energy.cas.psu.edu to record responses from the different suppliers. A worksheet for commercial/industrial customers can be downloaded at http://Energy.cas.psu.edu.

Pricing Strategies for Electricity

The licensed suppliers of electricity will likely have numerous pricing strategies for the electricity, including:

Flat-Rate
Flat-Rate ± Bandwidth
On-Peak/Off-Peak Rates
Real-Time Pricing (RTP)
Day-Ahead Real-Time Pricing
Block and Index Pricing
Combinations of the above

Flat-Rate Pricing (x cents per kWh whenever the electricity is used) will probably continue but may be quite expensive. A variation of flat-rate pricing for commercial and industrial customers will be flat-rate pricing for a customer-specified amount or block of electricity for each month. There likely will be a substantial penalty if consumption exceeds or drops below the specified amount for any month by a certain small percentage. This pricing strategy is referred to as a **Flat-Rate ± Bandwidth**.

With **On-Peak/Off-Peak Rates**, a flat-rate price for the on-peak periods and a lower flat rate price during the off-peak periods will apply. If considering this option, then be sure you clearly understand the hours in each week when the more expensive on-peak rate will be charged. Sometimes the on-peak and off-peak periods change from season to season.

There are many indications that **Real-Time Pricing** (RTP) will become prevalent, especially for commercial and industrial customers. With RTP, the cost to the customer for the electricity being consumed is indexed to the spot-market value of electricity for that particular hour. For example, the cost for electricity at 3:00 a.m. may be 3.2 cents per kWh, but 35 cents at 3:00 p.m. the next afternoon. The customer will not know in advance what the price of the electricity will be. A variation of RTP is **Day-Ahead RTP** which means that a customer can go on-line at 5 p.m. (or later) to learn what the hour-by-hour price for electricity will be for the next calendar day.

Block and Index pricing may be another pricing strategy of interest to some commercial and industrial customers. With a Block and Index pricing strategy, the customer would specify a block of electricity to be used each month throughout the contract period. The price for any electricity used that is above the monthly block amount would be indexed to the spot-market price. There will be a financial penalty if the electricity consumption for any given month is below the block amount for that month.

There may be additional pricing strategies or creative combinations of the described strategies. Be sure that you understand all the origination fees, termination fees, collateral requirements, penalties, liabilities and other charges that may be assessed. Ask any supplier being considered to calculate what your total costs would be for each pricing strategy for the coming contract period, assuming your electricity consumption and demand patterns remain the same as the past year or so. A supplier can obtain electronic records of your electricity consumption history from your EDC, assuming that you give your consent in writing for the supplier to have access to your records.

Making Your Electricity Account More Attractive to Suppliers

All customers will benefit by establishing and maintaining a record of paying electricity bills on time. Let's face it. No supplier will be interested in a customer who historically has been tardy in paying electricity bills.

Suppliers are definitely interested in knowing when you use your electricity. If you are using it at times that do not contribute to peak demand for the grid, then you will be considered more attractive as a customer. But how can you determine when you use your electricity? Take advantage of on-line services that are becoming available. For example, PPL now has the on-line service "PPL Electric" where any PPL customer can access her/his account and see when the electricity is being used on an hour-by-hour basis for each day for the past several years. PECO, Met-Ed, Penelec, and Penn Power have similar services, but there are some costs involved to access their services.

For all commercial and industrial customers, the most important activity to get lower prices for electricity is to manage the peak demand. Load factor is a simple, reliable index of how well (or how poorly) the peak demand is being managed. Load factor is defined as:

LF = kWh Consumed x 100% / (kW Demand x Days in Billing Period x 24)

Let's suppose your electricity consumption for a certain billing period was 309,500 kWh and the peak demand was 678 kW. The length of the billing period was 32 days. Your load factor for that billing period is 59.4 %, based on the calculation:

309,500 kWh x 100 %/(678 kW x 32 days x 24 hours per day) = 59.4 %

Calculate your load factor for each billing cycle. The higher your load factor, the more attractive you are. Under realistic conditions, the highest load factor that can be achieved consistently for most commercial and industrial customers (without any supplemental on-site generation) is about 80%, which is considered to be excellent. If load factor dips below 50%, there should be a review of the operation to analyze why the load factor is low and to consider various approaches to remedy the situation.

To increase load factor, stagger large electrical loads during periods when your peak demand is likely to be reached. By ensuring that one large load does not stack on top of another large load, you can effectively increase your load factor. To gain even more cost benefits, stagger as many large loads as possible to off-peak periods.

How to Identify "Electricity Hogs"?

Easy-to-use electricity usage monitors are available at modest prices to identify the "electricity hogs" in your home, farm or business. One example is the Kill-A-Watt™ electricity usage monitor. This monitor has a large LCD display indicating the following:

Volts
Amps
Watts
Frequency
KiloWatt Hours
Power Factor
Time Duration

An electricity usage monitor can be used for many applications to compare, for example:

- electricity consumption of a compact fluorescent lamp versus a traditional incandescent lamp providing the same light output.
- electricity consumption of a TV, computer, or printer when it is "on" and when it is "off". You may be surprised at the high electricity consumption when the device is turned "off" because it is not really "off" but in a hibernation mode.
- electricity consumption of a new refrigerator versus the old refrigerator in the garage or basement.
- voltage and frequency (in Hertz or cycles per second) of your power supply. Normal voltage should be about 110-120 volts and frequency should be 60 Hz. Checking the voltage and frequency is important if you are relying on an on-site generator to provide all or a portion of your electricity supply. Electronic equipment is especially vulnerable to voltage and frequency fluctuations.

The energy usage monitor can be used for spot checks to compare the wattage levels of "on" versus "off" of an appliance. It can also be used to monitor kWh consumption over an extended period of time for a refrigerator or dehumidifier, as examples. More expensive models of the monitor are available where the cost of electricity can be inputted to the monitor and then the results will indicate the cost of operation of a particular appliance or device over the period being evaluated.

The electricity usage monitor shown is for 110-120 volts and a maximum of 15 amps. Monitors are also available for higher voltage and amperage levels but these monitors will cost considerably more.

Summary

The deregulation of electricity generation in PA means that each electricity customer will have the opportunity to shop for an electricity supplier. If a supplier is selected, then that supplier will be assessing charges for both the generation and the transmission of the electricity. Your Electric Distribution Company (EDC) will still be responsible for the distribution of your electricity and will assess separate charges for the distribution. If no supplier is selected, then your EDC will serve as your default supplier (or POLR, provider of last resort) and will assess charges for generation and transmission in addition to the distribution charges.

This factsheet provides steps to complete before shopping for an electricity supplier. Questions to ask suppliers are provided. Several measures are identified that will make your electricity account more attractive.

Energy consumption needs to be viewed in the context of an overall energy management plan. For residences, the objective is to use energy as efficiently as possible without sacrificing health, comfort, and safety of all occupants. For commercial and industrial enterprises, the challenge is to optimize energy use to increase profitability and net cash flow of the business, industry, or service.

Always keep in mind that the cheapest electricity is electricity that is not used because of an effective energy management program.

Additional Resources

See "*The Legislation and the Implementation," Part 1 of Deregulation of Electricity Generation*. Click on www.abe.psu.edu/extension/factsheets/h/energyindex.htm to access this factsheet 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 & 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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