



Synapse
Energy Economics, Inc.

Electricity Trends in Pennsylvania

Energy and How We Pay for it in Pennsylvania: The Next Five Years and Beyond
Central Susquehanna Citizen's Coalition

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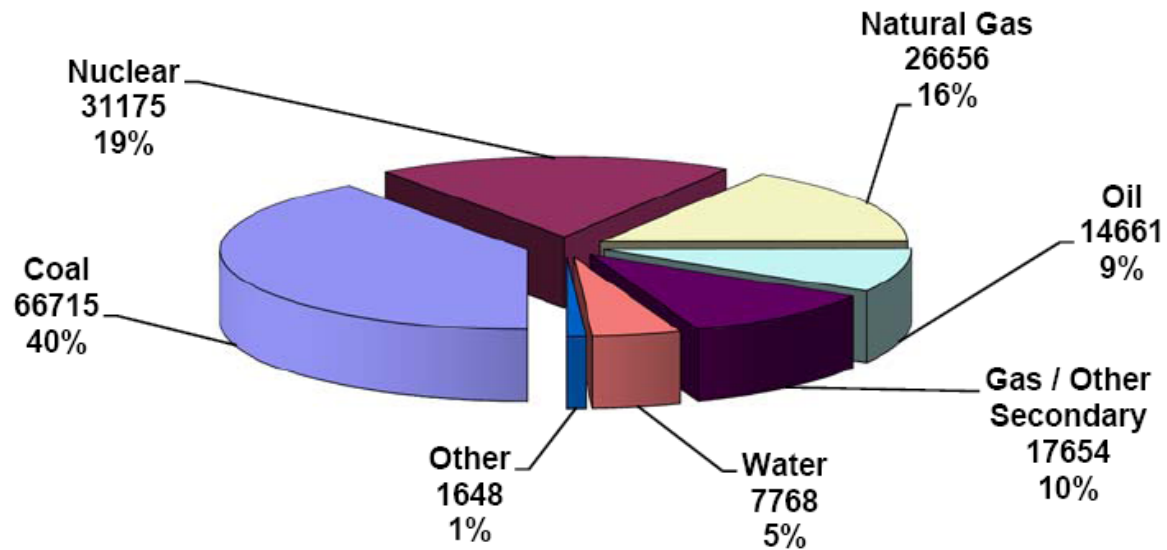
Electricity Trends in Pennsylvania

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- Overview of PJM
- Expiration of generation supply rate caps and electricity choice
- Net metering and feed-in tariffs for residential renewable generation
- Pennsylvania policies to reduce greenhouse gas emissions from electricity generation

PJM RTO

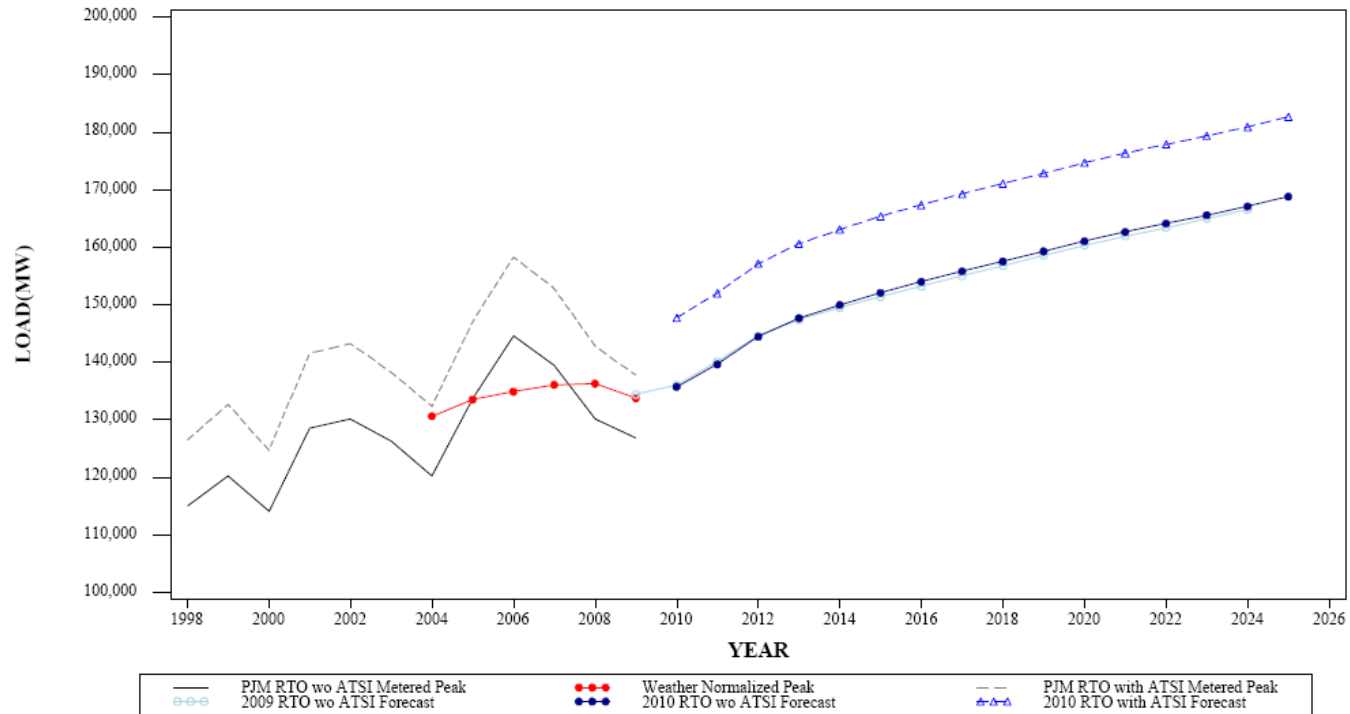
(MidAtlantic, AP, ComEd, AEP, Dayton,
Duquesne & Dominion Regions)
Capacity By Fuel Type -- 166,276 MW installed capacity



Source: PJM, "Capacity by Fuel Type 2009," available at <http://www.pjm.com/markets-and-operations/ops-analysis.aspx>.

Overview of PJM 2010 Load Forecast

SUMMER PEAK DEMAND FOR PJM RTO
GEOGRAPHIC ZONE



Source: PJM, *2010 Load Forecast Report*, January 2010, p.24.

Expiration of Rate Caps in PA

1997 Electricity Generation Choice and Competition Act

1997 Electricity Generation Choice and Competition Act

- Allowed consumers to purchase power from independent electric generation suppliers (EGSs) while regulated electric distribution companies (EDCs) delivered the electricity
- Allowed EDCs to recover “stranded costs” from investments made before the law was passed – customers pay through “Competition Transition Charge”
- Rates were capped at 1996 levels to make up for Transition Charge. Transition Charge will expire with rate caps.
- Rate caps for 40% of Pennsylvania customers have already expired.
- All rate caps will expire by January 1, 2011.

HB 2200 – Act 129 of 2008

- Requires EDCs with 100,000+ customers to file plans with the PUC regarding demand reduction strategies, smart meter deployment, real-time pricing strategies, and contracts with third-party entities for program implementation.
- Encourages energy-efficiency, conservation, and demand response.
- Reduction Targets:
 - 1% reduction in demand by May 2011
 - 3% reduction in demand by May 2013
 - 4.5% reduction in 100 hours of highest (“peak”) demand by May 2013
- October 2009: The PUC approved the Energy Efficiency and Conservation Plans filed by Pennsylvania’s seven major EDCs.
- Early 2010: The PUC will consider the Smart Meter and Time-of-Use Rate Plans that were filed by the Companies in August 2009.

Expiration of Rate Caps in PA

Rate Cap Expiration Schedule

Rate Cap Expiration Schedule by Electric Distribution Company

Company	Generation Rate Cap Status	% of PA Ratepayers
Citizens Electric Co.	Expired	0.1
Duquesne Light Co.	Expired	10.6
Pennsylvania Power Co.	Expired	2.8
Pike County Light & Power Co.	Expired	0.1
UGI Utilities Inc.	Expired	1.1
Wellsboro Electric Co.	Expired	0.1
PPL Electric Utilities Inc.	Expired	24.6
Metropolitan-Edison Co.	Dec. 31, 2010	9.5
Pennsylvania Electric Co.	Dec. 31, 2010	10.6
PECO Energy Co.	Dec. 31, 2010	27.8
West Penn Power Co.	Dec. 31, 2010	12.7

Source: PA PUC, "The Expiration of Electric Generation Rate Caps," http://www.puc.state.pa.us/general/consumer_ed/pdf/Rate_Caps.pdf

Expiration of Rate Caps in PA Electric Generation Supplier Choice

Electric Generation Supplier (“EGS”) Choice

- The PA Public Utilities Commission expects rates to increase when rate caps expire. The magnitude of the increase will depend upon the market price of electricity at the time the EDC purchases its power.
- Customers can choose to purchase generation supply from their EDC or from a competitive supplier. There are 45 licensed EGSs in Pennsylvania.
- Customers may or may not save money by choosing an EGS, but in some areas, savings may be as much as 10%.

- As of January 2010:
413, 741 customers have
chosen an alternative supplier.

Number of Customers Served By An Alternative Supplier As Of 1/1/2010				
	Residential	Commercial	Industrial	Total
Allegheny Power	0	1	0	1
Duquesne Light	107,621	11,472	619	119,712
MetEd/Penelec	0	1	4	5
PECO Energy	2,579	19,295	7	21,881
Penn Power	21,439	2,845	152	24,436
PPL*	205,961	40,865	847	247,673
UGI	0	26	7	33
Total	337,600	74,505	1,636	413,741

Source: PA OCA, “Pennsylvania Electric Shopping Statistics, January 1, 2010,” <http://www.oca.state.pa.us/Industry/Electric/elecstats/Stats0110.pdf>

New Jersey FP-BGS 3-Year Ladder

BGS-FP Load	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
33%													
33%													
33%													

Key	
Initial 1-year contracts	
Initial 3-year contracts	
Rollover 3-year contracts	
Subsequent 3-year contracts	
Subsequent 3-year contracts	

Figure 1: Schematic of buildup of NJ BGS-FP 3-Year ladder

Highlighted column shows that the 2010 BGS-FP rate is determined by contracts that were procured in 2008 and 2009, as well as those that are procured in the 2010 auction. Likewise, those contracts that are procured in 2010 will affect not only 2010 BGS-FP rates, but also 2011 and 2012 rates.

Expiration of Rate Caps in PA

Choosing an Electric Generation Supplier

Choosing an Electric Generation Supplier

- “The Price to Compare” for each EDC and the current price offered by electric suppliers at <http://www.oca.state.pa.us/Industry/Electric/elecomp/ElectricGuides.htm> and at <http://www.papowerswitch.com/shop-for-electricity/>.
- The PUC also provides a Shopping Worksheet to compare savings across suppliers: http://www.papowerswitch.com/shop-for-electricity/shopping-worksheet/Residential_Rate_Caps.pdf
- To calculate savings, subtract the current supplier price from the price to compare, and multiply the difference by the number of kWh hours used according to your monthly electricity bill. For example:

Price to Compare	10¢/kWh
New Supplier Price	- <u>9¢/kWh</u>
Savings	1¢/kWh
Savings	1¢/kWh
Monthly Use	X <u>500 kWh</u>
Savings per Month	\$5.00

- The savings generated are only for the *generation supply* portion of an electricity bill.
- An alternative supplier may also offer electricity from renewable sources, budget billing, or other incentives.
- An alternative supplier can be chosen or changed at any time.

Sample Price Comparison

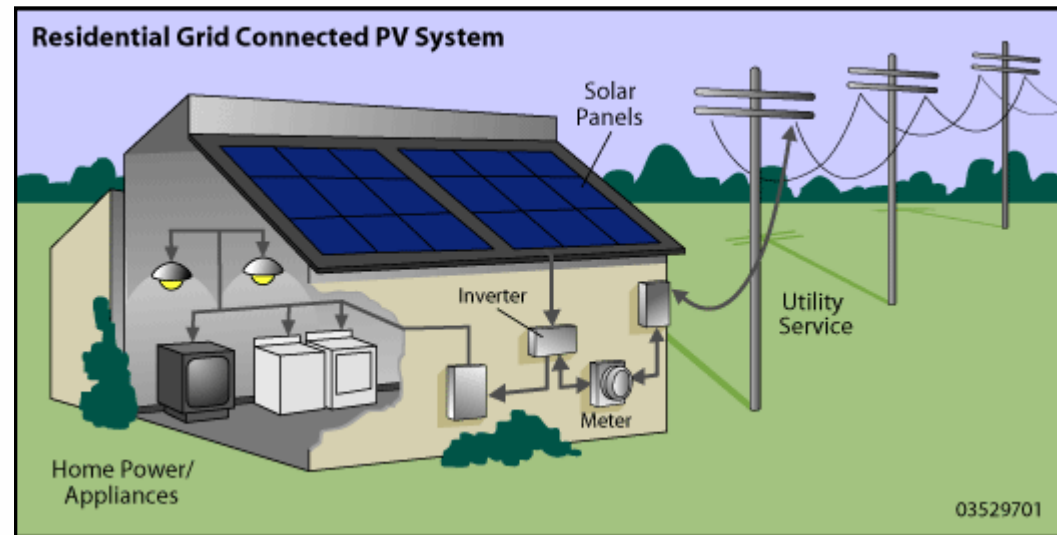
Updated March 25, 2010

PPL Electric Utilities		Rate RS		Regular Residential Service		
PPL Electric Utilities 1-888-668-4775 www.pplelectric.com/choice		Prices in cents per kWh	Monthly Generation & Transmission Bill If You Use:			Early Cancellation Fee?
			500 kWh	1000 kWh	2000 kWh	
Price to Compare through June 30, 2010:		10.448 ¢	\$52.24	\$104.48	\$208.96	
Current Licensed Competitive Supplier Prices:						
Con Edison Solutions 1-866-842-8166 www.conedsolutions.com						
Fixed price: 1 year term		9.39 ¢	\$46.95	\$93.90	\$187.80	No
Direct Energy 1-888-734-0741 www.directenergy.com						
Fixed price: 1 year term						
Price for the first 3 months		8.99 ¢	\$44.95	\$89.90	\$179.80	Yes: \$100
Price for the next 9 months		9.49 ¢	\$47.45	\$94.90	\$189.80	
Fixed price: 1 year term		9.89 ¢	\$49.45	\$98.90	\$197.80	No
Fixed price: 1 year term		9.79 ¢	\$48.95	\$97.90	\$195.80	No
(Senior Citizen and Military Plan)* *This plan is available to residential customers who are 65 or older or who are active, retired or veteran military personnel who have or are currently serving in any branch of the U.S. Armed Forces or Reserves.						
Fixed price: 3 year term		9.99 ¢	\$49.95	\$99.90	\$199.80	Yes: \$300
Fixed price: 1 year term (Renewable Wind Plan)						
Price for the first 3 months		10.99 ¢	\$54.95	\$109.90	\$219.80	Yes: \$100
Price for the next 9 months		11.49 ¢	\$57.45	\$114.90	\$229.80	
Dominion Energy Solutions 1-888-216-3721 www.dom.com/products						
10% discount off of PPL's price to compare Valid through the December 2010 meter read date		9.403 ¢	\$47.02	\$94.03	\$188.06	No

Residential Renewable Generation Net Metering

Residential Net Metering in Pennsylvania

- PA customers may receive retail credit for up to 50 kW of electricity they generate from renewable sources such as solar and wind energy.
- Net metering measures the flow of electricity in both directions into and out of the home. The Net Excess Generation (NEG) is carried forward and credited to the customer's next bill at the retail rate.
- Net-metered generation from renewable sources is used to meet PA's RPS requirements, and customers receive ownership of RECs.
- Meter aggregation and virtual meter aggregation is allowed within two miles of the property and within the same utility territory.



Source: Agent Solar, "Why Solar| Solar Energy-Agent Solar," <http://www.argentsolar.com/why.html>

Residential Renewable Generation Feed-In Tariffs

Feed-In Tariffs

- Feed-in tariffs (FITs) guarantee long-term payments at pre-established rates for the electricity generated from renewable sources.
- FITs are the most widely-used incentive for renewable energy globally; growing in the U.S.
 - Five states and Gainesville, FL have FIT policies.
 - Pennsylvania does not have a FIT policy in place.
- *Gross Metering* requires a supply-side meter to measure system output. The electricity can be used on-site or it can be sent to the grid (policy in Washington State).
- National Renewable Energy Laboratory (NREL) has found that FITs are most effective when the policy is tailored to fit the local context.
- Unlike net metering, FIT payments depend on the technology type, resource quality, and project size.

Residential Renewable Generation FIT and Net Metering

Feed-in tariffs can be used in conjunction with net metering

- FIT policies are supply-side policies; net metering policies are based on demand reduction.
- Customers can choose to net meter and receive retail credits or receive a FIT payment for total energy sold to the grid.
 - FIT requires two separate meters
 - Choice depends on prevailing market prices, size of the project, and price offered by FIT program
- Existing net metered systems can be grandfathered into FIT program.
 - May not be desirable for creating incentives for *new* renewable generation
 - Should be considered on a state-by-state basis in context of the FIT legislation

Source: Toby Couture and Karlynn Cory, *State Clean Energy Policies Analysis (SCEPA) Project: And Analysis of Renewable Energy Feed-In Tariffs in the United States*, NREL Technical Report TP-6A2-45551, June 2009.

PA Sunshine Solar Program

Residential PV Rebates

Step #	Megawatt (MW) in Step	Rebate Amount (\$/Watt)
1	10	2.25
2	10	1.75
3	10	1.25
4	10	0.75

Residential and Small Business Solar Thermal Rebates

Step #	Number of Systems in Step	Rebate Amount
1	1,500	25%
2	1,500	20%
3	1,500	15%
4	1,500	10%

Pennsylvania GHG Policies

Alternative Energy Portfolio Standard

Alternative Energy Portfolio Standard (AEPS)

- 2021 Target:
 - 8% from Tier I resources, including 0.5% from solar PV
 - 10% from Tier II resources
 - PUC has adopted 15-year compliance schedule to reach 2021 targets
- Eligible Resources:
 - Tier I: solar PV, solar thermal, wind, low-impact hydro, geothermal, biomass, methane gas and fuel cells
 - Tier II: waste coal, distributed generation, DSM, large-scale hydro, MSW, wood by-products, IGCC coal technology
 - Most resources must come from PA or PJM Interconnection region
- Alternative Compliance Payment (ACP):
 - \$45/MWh
 - Separate solar PV ACP
 - ACP goes to PA Sustainable Energy Fund for alternative energy projects
- Rural electric coops must also offer customers voluntary energy efficiency and demand-side management programs under AEPS.

Source: DSIRE, "Pennsylvania Alternative Energy Portfolio Standard," http://dsireusa.org/incentives/incentive.cfm?Incentive_Code=PA06R&re=1&ee=1

Pennsylvania GHG Policies Alternative and Clean Energy Program

Alternative and Clean Energy Program

- Included in 2008 state energy bill
- Applies to commercial, industrial, non-profit, and local government sectors
- Administered by Department of Community and Economic Development and Department of Environmental Protection
- Offers grants, loans, and loan guarantees for alternative energy and clean energy projects
- Qualified projects include:
 - Installation of Energy Star rated energy efficiency equipment
 - Installation of an alternative energy system from the sources defined under AEPS
 - Replacement of a non-renewable energy system with renewable system
 - A facility that manufactures or produces alternative fuels
 - A facility that manufactures component parts that provide alternative energy
 - An alternative energy or alternative fuel R&D facility
 - Development of rail systems that deliver alternative fuels or high efficiency trains

Source: DSIRE, "DCED Alternative and Clean Energy Program," http://dsireusa.org/incentives/incentive.cfm?Incentive_Code=PA45F&re=1&ee=1.

- Energy Efficiency & Conservation
- Smart Meter
- Procurement of generation supply
- Cost capped at average of \$61.5 million/year --2% of 2006 utility revenues—recovered from customers starting in January 2010
 - \$2 per month for residential customers
 - 0.231 cents/kWh for small C&I customers
 - 38 cents/kWh for large C&I customers
- Penalty of \$1 to \$20 million for not meeting targets

High Performance Building Program

- Offers loans, grants, and loan guarantees for green buildings
- Commercial and residential buildings are eligible
- Must have LEED Gold certification and receive additional LEED credits

Sunshine Solar Rebate Program

- Offers rebates to residential and small commercial residents that install photovoltaic (PV) and solar thermal systems
- Maximum incentives are 35% of installed costs (under \$17,500 residential and \$77,500 commercial)

Source: DSIRE, "Pennsylvania," <http://dsireusa.org/incentives/index.cfm?re=1&ee=1&spv=0&st=0&srp=1&state=PA>.



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