Pepco Holdings, Inc

Comments On ITRON Review of PJM Models

PJM LAS

November 18, 2010

About PHI – PEPCO Holdings, Inc.

- PHI is a retail provider of electricity to 1.7 million customers under the Atlantic Electric, Delmarva Power and PEPCO brand names.
- We have residual control area responsibility for three PJM zones:
  - The Atlantic Electric zone
  - The Delmarva zone
  - The PEPCO zone
- The customers in these three zones have a combined metered summer peak demand of 12.9 gW and a combined annual Net Energy for Load of 62.4 tWh.

PHI's Position

- Since it's inception in 2006, forecasting at PJM has been independent, informed and objective – the standard in business forecasting.

- In order for PJM's electric markets to function efficiently, and for realized prices in cash, forward and ancillary markets to reflect fair value, the forecasts used by market participants must meet two criteria (as well as other criteria):
  - Forecasts must be unbiased.
  - Forecasts must be risk minimizing, in the sense that the standard error of the forecast (the forecast risk) is as small as possible.

- The changes recommended for the PJM forecasting process must be shown to meet these criteria.
  - PJM forecasters must remain independent.
  - Changes in method must improve the forecast (i.e., reducing bias or risk).

Independent, Informed and Objective

- All business economists are charged with providing their managements timely and accurate independent, informed and objective forecasts.
- It's incorrect to conduct "a review of PJM models." It would be correct to review PJM's forecasting business processes, including the models. Models don't make forecasts, people make forecasts.
- The forecasting process – the methods and models used and the design and schedule of forecast reports – depends entirely on the business context. No other forecasters have PJM's skill sets, business requirements, or reporting needs.

PJM's Forecast Track Record

PEPCO Zone	1-Year	2-Year	3-Year	4-Year	5-Year	6-Year	7-Year	8-Year
2009 PJM Unrestricted Forecast	635							
2008 PJM Unrestricted Forecast	305	834						
2007 PJM Unrestricted Forecast	80	374	913					
2006 PJM Unrestricted Forecast	6	129	448	971				
2005 PJM Unrestricted Forecast	(247)	(301)	(115)	157	719			
2004 PJM Unrestricted Forecast	389	(172)	(231)	(53)	211	765		
2003 PJM Unrestricted Forecast	182	389	(172)	(231)	(53)	211	765	
2002 PJM Unrestricted Forecast	(287)	177	404	(100)	(87)	149	478	1,095
2001 PJM Unrestricted Forecast	(273)	(287)	177	404	(100)	(87)	149	478
2000 PJM Unrestricted Forecast	261	(333)	(347)	117	344	(160)	(147)	89
1999 PJM Unrestricted Forecast	(74)	261	(333)	(347)	117	344	(160)	(147)
Mean Error	88.82	107.10	82.67	114.75	164.43	203.67	217.00	378.75
Standard Error	298.64	380.29	432.26	418.44	295.70	333.04	402.39	542.60

- The PEPCO zone is typical of PJM's track record.
- Over the period 1999-2008, the mean error of the forecast for the 1-period through 7-period forecasts is small relative to the standard error.

- PHI believes that any change in PJM's forecast methodology should be expected to improve this already excellent record.

Can PJM's Forecasts Be Improved?

- Forecasters can always improve their technique and provide forecasts that are more likely to have small errors.
- Arbitrary changes to methods – such as the proposed index numbers – may improve forecasting. Or not.

- Professional forecasters try to establish business processes that help screen proposed changes to methods so that forecasts improve over time.
  - Are implied elasticities more consistent or more reasonable with the change?
  - Are their patterns in the errors of the estimated equation or a backcast that make the change seem to be an improvement?
  - Do summary statistics support the belief that the change will reduce the standard error of the forecast?
- Professional forecasters change their methods after a careful review of the proposed change, obtaining quantitative support in favor of the change.

Example: Will the ITRON index numbers improve the PJM Forecast?

- We don't know, but we suspect not.
- The list of driving variables includes lots of related concepts – a professional forecaster would select one or two that are best in that application given the needs, task definition and the forecaster's skills.
- The exponential weights used in constructing the index are merely the shares of survey respondents that elected a method. There's no economic reason why that is a good choice.
- The index number is a weighted average of variables that trend together. The rate of growth in the index will be less variable than the rate of growth in the underlieing series (the variance of an average is less than the variance of the underlieing series).
- The use of the index number may result in lower forecasts that are not consistent with the economic outlook(s) being used to support the forecast.

PHI Recommends

- That PJM should not arbitrarily change forecasting methods.
- That PJM should define a research agenda (in consultation with stakeholders) aimed at monitoring and improving forecast accuracy.
- That PJM should define (in consultation with stakeholders) reasonably objective criteria to use in evaluating changes to methods.
- That PJM forecasters be vigilant in maintaining their independence, objectivity and understanding of the marketplace.

Thank you.

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