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STUDY CONCLUDES THAT HISTORICAL DAY-AHEAD LMPs IN PJM INCLUDED A POSITIVE MARKUP OVER SHORT-RUN MARGINAL COST

Boston, February 5, 2007 – London Economics International LLC (LEI) released a comprehensive study last week estimating the monthly peak and off-peak price-cost markup index in Day-Ahead Locational Marginal Prices (LMPs) for the PJM Classic region over the period January 2003 through July 2006. The main task for the study was to estimate the effective energy prices assuming generators are offering their output exactly at short-run marginal costs (SRMC). Once short-run marginal cost-based prices are estimated, they were then compared against actual historical LMPs and a price-cost markup index¹ was calculated for different periods within the study timeframe. In order to capture locational as well as time-based trends in price-cost markups, the modeling explicitly recognized and considered the market separation that occurs within a market area due to internal transmission congestion.

For most of the months over the study timeframe and most of the sub-regions of PJM Classic, the price-cost markup indices are positive and statistically significant at a 95% confidence level, leading LEI to conclude that price-setting resources typically offered their output at a price above short run marginal costs in PJM Classic over the 2003-2006 timeframe. Price-cost markup indices vary considerably through time and across regions, although there is little correlation between the index values and load levels for any region. It is therefore difficult to extrapolate the results of this backwards looking analysis to future market conditions,

¹ LEI utilized the conventional definition of a price-cost markup index as employed by other ISOs and academics. The markup index is a ratio where the numerator is the difference between the observed market price and the theoretical market price under perfect competition, namely the SRMC-based simulated price, and the denominator is the observed market price. The price-cost markup index is therefore a percentage and is a 'unit-free' measure that can be used for comparative analysis across regions and across time. A positive index value (greater than 0) indicates that actual LMPs exceeded estimated SRMC-based price, while a negative index value (less than 0) suggests that actual LMPs were lower than the estimated SRMC-based prices.

especially given pending structural changes in PJM. Further research is necessary in order to explain the historical trends, and assess whether they are likely to reoccur in the future. One other important finding of the study is the price-cost markup indices for peak periods are almost always higher than the indices for off-peak periods, however, further study is necessary before conclusions can be drawn about the legitimacy of the historical markups - are the observed markups sufficient to remunerate existing plants and attract new investments or are they possibly excessive and therefore an indication of market inefficiencies, such as abuse of market power?

Although such critical policy questions were beyond the direct scope of this study, Julia Frayer, Managing Director of London Economics noted that the results of this empirical analysis provide a robust, quantitative foundation for future analysis for policymakers. "The fact that prices may depart from SRMC is not itself unusual or an indication of market dysfunction. Rather, it is a signal that further study and analysis is necessary before conclusions can be drawn about the efficiency of the market system in PJM, and more broadly, what improvements are necessary to in the future for our evolving deregulated energy markets."

The empirical study was funded by the American Public Power Association and the National Rural Electric Cooperative Association. Dr. Serkan Bahçeci, consultant with LEI, presented the results of the study at the APPA's symposium, *Assessing Restructured Electricity Markets*, in Washington D.C. on February 5, 2007. The complete study report is posted on LEI's website for download at <http://www.londoneconomics.com/publications.htm#pub>. Please contact Julia Frayer or Dr. Serkan Bahçeci with further questions.

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London Economics International LLC (LEI) is a global economic, financial, and strategic advisory professional services firm specializing in energy and infrastructure. The firm combines detailed understanding of specific network and commodity industries, such as electricity generation and distribution, water and wastewater provision, and natural gas distribution, with a suite of proprietary quantitative models to produce reliable and comprehensible results.