Do Big New Zealand Hydro Generators Bid Strategically into the Electricity Market?

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ABSTRACT

Recent papers by Bushnell[1] and Hortacsu and Puller[2] have explored the issue of how to identify strategic bidding behaviour by generators in spot markets where each generator bids in a set of price/quantity pairs and generating plant is then scheduled in merit order of bids by an independent system operator. This paper uses detailed half-hourly data on bids from the supply and demand sides of the New Zealand Electricity Market (NZEM) in 2003 to test Bushnell's suggestion that large hydro generators allocate a disproportionate amount of their available water to run in off-peak (low-price) periods, as a means of raising peak-period prices by withholding potential low-cost supply while meeting both minimum-flow constraints and a regulatory check on spilling water to waste. The two largest hydro-thermal generators, Meridian Energy and Contact Energy, between them account for over half New Zealand's total generating capacity. The analysis focuses on the offers submitted by these two players, with particular emphasis on the month of April 2003 when extremely high spot prices were recorded at a time of low water storage and the withdrawal for maintenance of two large thermal plants, one of them owned by Contact Energy.

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1 Bushnell, J. "A Mixed Complementarity Model of Hydfrothermal Electricity Competition in the Western United States", *Operations Research* 51(1): 80-93, Jan/Feb 2003.

2 Hortacsu, A., Puller, S.L., *Testing Strategic Models of Firm Behaviour in Restructured Electricity Markets*. CSEM Working Paper 125, University of California Energy Institute, March 2004.