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Open Transmission and Spot Markets for Power: Models of Power and Transmission Pricing on the Western Network

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The Energy Policy Act of 1992 promoted the development of spot markets for electric power by requiring utilities to open their transmission systems to wholesale power sales. This paper is an early look at how well the energy spot market is doing. We develop a model of power and transmission pricing in a network of markets where power flows obey the complex physics of reactive flows in a network rather than contract paths. We estimate a vector error correction model using peak and off-peak electricity spot prices during 1994-1996 covering 11 regional markets in the western United States and test these prices for evidence of market integration. The results show evidence of an efficient and stable wholesale power market. If the retail market were to achieve a comparable efficiency, consumers would gain over US\$13 billion per year in seven states within the trading area.