

***** DRAFT *****

**SSG-WI Workshop on
Economic Assessment of Transmission Additions**

June 22, 2004 --- 1:00 p.m. to 5:00 p.m.

June 23, 2004 --- 8:00 a.m. to 12:00 p.m.

BPA Offices - Tentative

Portland, Oregon

**Day 1 –Transmission Oriented Production Simulation Programs and
Locational Marginal Pricing**

- 1) What these programs do and why we need them
- 2) Overview of available programs (GE-MAPS, ABB Market Simulator, etc.)
- 3) Modeling of hydro generation
- 4) Modeling of wind generation
- 5) Modeling of thermal generation
 - a. Variable O&M costs
 - b. Average heat rate versus full heat rate curve
 - c. Start-up costs
- 6) Economic data requirements
- 7) Load forecast data and load modeling
 - a. Data required: Monthly peak load, monthly energy, and load shape
 - b. Calculation of hourly loads: development of hourly load forecast for the area and distribution to buses based on powerflow distribution
- 8) Modeling of transmission network and constraints
 - a. Full network modeling
 - b. Why transport (bubble) models are inadequate
 - c. Individual lines
 - d. Paths
 - e. Nomograms
 - f. Modeling lower voltage limitations
- 9) Program Outputs
 - a. Changes in production cost
 - b. LMP prices and shadow prices
 - c. Generation dispatches and capacity factors
 - d. Transmission loadings and limit identification
 - e. Phase shifter and DC line control actions.
- 10) Limitations and potential improvements
 - a. Multi dam hydro model
 - b.
- 11) Overview of LMP pricing
 - a. Simple three node example
 - b. Demonstration on a complex network using Power World

- c. Relation to production cost savings (i.e., Change in production cost equals the change in price to load plus the change in price to generators plus the change in congestion revenue)

Day 2 – Economic Valuation of Transmission Additions

- 1) Interpreting the results of the TOPS studies
 - a. Case Study - Overview of the example case to be used throughout the day
- 2) Selecting scenarios to run (i.e, high and low gas prices)
 - a. Subjective scenario selection
 - b. Objective selection using scientific methods
 - c. Monte Carlo Simulation
 - d. Combing the scenarios by assigning probabilities to develop an overall benefit
- 3) Identifying benefits
 - a. Benefits to load from changes in LMP prices
 - b. Benefits to generation from changes in LMP prices (consumer owned and merchant generation)
 - c. Benefits to transmission rights holders in changes in congestion revenues
 - d. Example of benefit calculation from and individual entity
- 4) The effect of contracts on benefits
 - a. Generation contracts
 - b. Transmission contracts
 - c. Transmission ownership
- 5) Assessing the ability of new transmission to mitigate market power
 - a. Bid adders models
 - b. Residual supply index (RSI) models
 - c. Game theory models
 - d. The effect of generation contracts on market power
 - e. The effect of transmission contracts on market power
 - f. Localized market power (i.e., a generator on the San Francisco peninsula)
- 6) Benefit Tests
 - a. Societal – Overall reduction in production cost
 - b. Participant – From the perspective of the entity funding the transmission project
 - c. Should generation revenue be included (competitive revenues and market power revenues)