Model INPUT Questions

1. What are the basic load (growth) assumptions?
   1. What is the peak load assumption, by year, by month?
   2. What are the hourly energy growth assumptions, by year, by month?
   3. How is load allocated to buses, multiplier of load zone, weather zone, etc.? Is the multiplier constant, i.e. every hour has similar growth?
   4. How does the multiplier change when new buses are added?
   5. How is non-weather sensitive load handled, i.e. a large industrial load?
2. Contingencies
   1. How are single line contingencies utilized?
   2. How are multi-section lines, utilized?
   3. How are transformers handled?
   4. How are load throw-over schemes handled?
   5. How are contingencies that change buses (or definitions) handled over time?
   6. Which contingency criteria are being utilized in the model, the ERCOT operations set or the planning set (NERC P1 and P7)? We presume that the operations set is a sub-set of the planning set.
3. How was generation modeled?
   1. Single point heat rate, linear curve, quadratic curve?
   2. What have been the assumptions of gas prices, by month, by region, i.e. Houston area vs West Texas?
   3. Were any marginal cost adders used other than heat rates, i.e. maintenance costs, environmental adders?
   4. How have generator additions & retirements been handled?
   5. How have the solar and wind units been modeled, hourly shape of output?
   6. Are CCCTs modeled as a “train” (one GT plus percentage of the HRSG) or as a specific GT plus downstream unit (CCCT specific ratio of efficiency)?
   7. Have lignite/coal units that are limited in seasonal output been modeled that way?
4. How have electrical topology changes been implemented over the various years of the study?
   1. How have changes due to major transmission been handled, i.e. Houston import project, CREZ, PREZ?
   2. Have interface limits been utilized in addition to line ratings?
   3. How have line ratings been implemented, seasonality, or dynamic ratings?
5. Has generator commitment been “pre-determined” through any type of algorithm, i.e. minimized cost across time (24 to 144 hours), committed against projected price, etc.?
6. Have certain unit s been defined as “must run”?
7. Has load been able to bid with a single point price, linear curve, quadratic curve? If so, how much load has been modeled with price sensitive demand (this is defined as price sensitive load for the next question)?
8. Has price sensitive load been modeled specifically at buses, or spread out across a region or sub region?
9. How are Ancillary Service provisions by unit modeled?
10. How are A/S prices determined, arbitrage free vs. energy?

Model OUTPUT Questions

1. How do the average modeled results compare to:
   1. Historical capacity factors of the wind units, in aggregate, by month?
   2. Historical capacity factors of the lignite units, in aggregate, by month?
   3. Historical capacity factors of the CCCT units, in aggregate, by month?
2. Do the wind units exactly follow their hourly input curves or are their outputs curtailed?
3. On average do lignite units “back down” at night and ramp up during the day?
4. Do the resulting model output prices “generally” follow the time of use blocks based upon historical patterns, by season, month, on-peak vs. off-peak, etc,.
5. Was the model solved with a DC or AC solution?
6. What is the granularity of the output solution, by hour, by bus LMP?