Market Monitoring Indices

1. Summary statistics for PJM system by hour/day/week/month/year.
   1.1. PJM system prices and loads: day ahead and real time markets.
       1.1.1. Average PJM load weighted price;
       1.1.2. Maximum PJM load weighted price;
       1.1.3. Components of load weighted prices;
           1.1.3.1. Energy
           1.1.3.2. Marginal losses
           1.1.3.3. Congestion
       1.1.4. Average PJM load;
       1.1.5. Maximum PJM load;
       1.1.6. Correlations between PJM prices and loads.
   1.2. PJM congestion.
       1.2.1. Maximum hourly congestion costs;
       1.2.2. Total congestion cost;
       1.2.3. Number of active constraints.
   1.3. PJM volumes.
       1.3.1. Total MW bid;
       1.3.2. Total MW self scheduled;
       1.3.3. Total bilateral contract MW;
       1.3.4. Hourly net imports and exports including all components.
2. Day ahead market
   2.1. Total hourly load
   2.2. Composition of load
       2.2.1. Fixed price bids
       2.2.2. Price sensitive bids
       2.2.3. Decrement bids
   2.3. Composition of supply offers
       2.3.1. Generation offers
       2.3.2. Increment offers
3. Aggregate relationships between day ahead and real time markets
   3.1. Hourly aggregate LMP comparisons
   3.2. Hourly aggregate load comparisons
   3.3. Hourly aggregate congestion comparisons
4. Comparative prices and loads for PJM and surrounding power markets:
   4.1. Forward prices for each system by market term;
   4.2. Forward price spreads by market term;
   4.3. Real time prices as available;
   4.4. Real time price spreads;
   4.5. Border prices
   4.6. Loads for each system as available;
   4.7. Net imports/exports between PJM and each system.
4.7.1. Real time
4.7.2. Day ahead
4.7.3. By interface
4.8. Curtailment volume / TLR events

5. Locational prices and loads.
5.1. Bus locational marginal prices (LMPs);
5.2. Aggregate LMPs;
5.3. Bus LMPs less the PJM average price;
5.4. Loads and generation by bus;
5.5. The distribution of LMP rankings for each bus by bus price and by bus load/generation;
5.6. Daily/weekly/monthly price-load comparisons:
  5.6.1. Maximum bus LMP by hour;
  5.6.2. Minimum bus LMP by hour;
  5.6.3. Average load LMP by zone, by aggregate load bus, for PJM;
  5.6.4. Average generation LMP by zone, by aggregate load bus, for PJM;
  5.6.5. Load/injections by bus, by zone, by aggregate buses, for PJM.
5.7. Zonal LMPs
  5.7.1. Zonal daily LMP
  5.7.2. Highest bus LMP within zone;
  5.7.3. LMP ranking across zones.
5.8. LMPs by jurisdiction
5.9. Load Duration
5.10. Load-weighted LMP
5.11. Fuel and emission allowance cost adjusted load weighted LMP
5.12. Marginal Resource Based Components of LMP
  5.12.1. Fuel
  5.12.2. Emissions
  5.12.3. VOM
  5.12.4. Adders
  5.12.5. Markup
  5.12.6. Adjustments

6. Congestion by hour/day/week/month/year by facility type/voltage/bus/zone/bus aggregates.
  6.1. Total congestion costs for period;
  6.2. Peak congestion costs;
  6.3. Percent of time with congestion;
  6.4. Constraint duration
  6.5. Frequency of individual constraints;
  6.6. Frequency of must run price cap implementation;
  6.7. Frequency of constraints without must run price cap implementation.
7. Transmission congestion and FTR revenue adequacy
8. Congestion comparisons between day ahead and real time markets
8.1. Total congestion costs for period;
8.2. Peak congestion costs;
8.3. Percent of time with congestion;
8.4. Frequency of individual constraints;
8.5. Frequency of must run price cap implementation;
8.6. Frequency of constraints without must run price cap implementation.

9.1. Unit offer/supply curves;
9.2. Maximum economic offer;
9.3. Minimum economic offer;
9.4. Company aggregate offer/supply curves;
9.5. Aggregate PJM supply curves;
9.6. Comparisons of unit offer/supply curves to historical offer curves;
9.7. Comparisons of company offer/supply curves to historical supply curves;
9.8. Comparisons of aggregate PJM supply curves to historical supply curves;
9.9. Deviations from requested dispatch, by unit;
9.10. Ramp rates by unit, by time period, by company.
9.11. Comparisons of ramp rates by unit type, by company.
9.12. Operational constraints on offers: start times; minimum run requirements; minimum down times; maximum starts.
9.13. Start up costs.

10. Comparisons between day ahead and real time offers

11. Relationship between offers and LMPs
11.1. Identification of units which set price;
11.2. Identification of fuel type of marginal units;
11.3. Frequency of individual units setting price;
11.4. Frequency of generation owners setting price.

12. Demand Response
12.1. Volume
12.2. Price

13. Net Revenue
13.1. By unit type
13.2. By market/revenue source
13.3. Fuel costs
13.4. Net revenue adequacy
13.5. Internal rates of return
13.6. Total revenue per MWh

14. Operating Reserve
14.1. Credits
14.2. Charges
14.3. Deviations
14.4. Concentration

15. Regulation
15.1. Available regulation
15.2. Regulation offers
15.3. Regulation price
15.4. Aggregate regulation supply
15.5. Regulation adequacy
16. Synchronous Condensing
   16.1. Condenser bids;
   16.2. Condenser costs;
   16.3. Condenser credits;
   16.4. Total condenser MWs;
   16.5. Total spinning requirements.
17. DASR
   17.1. Volume
   17.2. Prices
   17.3. Market structure
18. FTR indices
   18.1. FTR Auction Market
   18.2. Long Term FTR Auction
   18.3. Monthly Balance of Planning Period FTR Auction
   18.4. Auction Revenue Rights (ARR)
   18.5. FTR Indices
      18.5.1. Total market volume offered and cleared;
      18.5.2. Total market revenue;
      18.5.3. Average clearing price;
      18.5.4. Path specific revenue and volume;
      18.5.5. Source specific revenue and volume;
      18.5.6. Sink specific revenue and volume.
      18.5.7. Constraint specific revenue and volume
      18.5.8. Direction (prevailing vs. counter flow) revenue and volume
      18.5.9. By physical entity vs. financial entity
      18.5.10. By trade types
      18.5.11. Revenue adequacy
      18.5.12. Value as hedge
19. Available capacity
   19.1. Total capacity resources;
   19.2. Total available capacity;
   19.3. Outage status by unit;
   19.4. Frequency of outages, by type, by unit, by time period;
   19.5. Comparisons of outages across units;
   19.6. Company summary outage frequency;
   19.7. Comparisons of outages across companies;
   19.8. Frequency of unit outages by time period, by demand conditions; by system/bus price.
19.9. Planned capacity

20. Capacity market (RPM)
   20.1. Company unit offers;
   20.2. Supply/demand balance;
   20.3. Market structure (Three pivotal supplier test)
   20.4. Market prices for each market;
   20.5. Avoidable costs;
   20.6. Avoidable project investment;
   20.7. Unit specific net revenues;
   20.8. Forced outage rates;
   20.9. Mitigation/offer caps;
   20.10. Exporting of units by company;
   20.11. Opportunity costs of exports;

21. Reliability
   21.1. Outage & availability factors
      21.1.1. By unit type
      21.1.2. By duty cycle
      21.1.3. By outage/cause type

22. Market structure by market
   22.1. Herfindahl Hirschman Index (HHI)
      22.1.1. Concentration ratios by hour;
      22.1.2. Incremental concentration ratios by hour;
      22.1.3. Concentration ratios by transmission defined markets within PJM;
      22.1.4. Concentration ratios by zone;
      22.1.5. Concentration ratios by interface.
   22.2. Three pivotal supplier (TPS) test results
      22.2.1. By constraint
      22.2.2. By zone
      22.2.3. By interval

23. Price-cost margins (Markup)
   23.1. Unit specific price-cost margins;
      23.1.1. Compare unit offers to unit costs
   23.2. Company price-cost margins;
      23.2.1. Compare unit price-cost margins by company.
   23.3. Price-cost margins for marginal units
   23.4. Aggregate price-cost margins