



# Update of Demand Curve Parameters for Three Years Beginning May 2014

**December 3, 2012 Assumption Presentation to  
ICAP WG**

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# NERA Will Team with Sargent and Lundy (S&L) and GE Energy Consulting (GE)



- S&L will develop construction costs, unit operating characteristics and costs, and a revenue requirement model with NERA providing financial parameters – S&L to make presentation on assumptions for unit selection and costing
- NERA will develop baseline nodal LBMPs using an econometric model
- GE will conduct parametric production cost model analyses at various installed capacity levels for adjustment of LBMPs to target capacity level
- NERA will simulate net energy revenues using LBMPs and unit operating costs and characteristics with spreadsheet model
- NERA will examine zero crossing point and slope and make recommendations on these issues and will consider the recommendations of the FTI Capacity Market Study
- NERA will utilize the Monte Carlo modeling approach that reflects the tendency of the market toward surplus
- NERA will use an open modeling approach and provide data and models to market participants
- Maintain philosophy that assumptions should reflect prospective market condition over the reset period for all variables except installed reserve levels

# Methodology Enhancement



- The system is too far from equilibrium to reliably extrapolate LBMPs from current reserve levels using the last three years of data to LBMPs at the target level and older data is too stale.
- A production cost model alone would not capture all elements of LBMP formation including random influences and daily gas price variability. A production cost model would not capture day-ahead and real-time LBMPs.
- An econometric methodology can accurately estimate nodal prices using a wide range of daily gas prices and can separate components of price formation including fuel prices on LBMPs applicable to both peaking units and mid-merit units for ranges of independent variables reasonably close to observed values and can reflect influences difficult to represent in a production cost model.
- The production cost model will provide a way to estimate how LBMPs will change with respect to reserve margin and can be used to simulate different reserve levels. It is not limited by the range of observed data.
- The hybrid approach will develop baseline estimates of LBMPs using an econometric model and reserve level adjustments from the MAPS model.

# Net Energy Revenue Process Overview



- Develop LBMPs using econometric model
  - Estimate both day-ahead and real-time LBMPs
  - For NYC consider selecting a large 345 KV generation node as the LBMP point
  - Adjust LBMPs to reflect forecast reserve levels over three year reset period
  
- Develop LBMP adjustment factors using production cost model
  - Starting point is CARIS data base
  - Implement gas price and reserve levels for base econometric analysis
  - Perform simulations at various reserve levels and estimate reserve margin to LBMP adjustment factors for zones
  
- Develop net energy revenues at various reserve levels
  - LBMPs at reserve levels from econometric model and MAPS adjustment factors
  - Spreadsheet calculating unit's ability to earn net energy revenues and reflecting operating limits and considering day-ahead and real-time markets
  - Addition of ancillary service and scarcity pricing revenues

# Econometric Model Data



- Gas prices
  - Transco Zone 6 for load zones G through I, NYC and LI
  - TETCO M3 for other locations
  
- Modeling Period
  - Most recent 3 years
  
- Zones Examined
  - Reset will examine costs for LI, NYC, Capital, various points in Load zones G through I, and Zones A to E in addition to any new capacity zone
  - Econometric model is developed for all zones

# Financial Parameters



- Use enhanced (endogenous seasonality) probabilistic model to develop carrying charge and amortization period
- Inflation estimate from latest public source
- Technical progress (real cost change) from latest DOE/EIA report
- NYC tax abatement (ICIP exemption) considering how unit will operate
- CAPM model to develop equity cost
- Debt will be examined using corporate and project financing assumptions
- Current project financing market for merchant projects appears to require shorter tenors and relatively high equity levels

# Scope of Analyses to Consider Lowest Net Cost Unit



- In addition to peaking unit the analysis will develop a Demand Curve for one other type of unit that is best candidate to have lowest net cost
  - Likely to be a combined cycle
  - Screening will be done on high level data to see if other technology is better candidate
  - S&L to discuss in more detail
  
- Lowest net cost means lowest Demand Curve Reference Point
  - Considers size of unit and impact on energy revenue measurement level and level of surplus
  - Also considers eligibility for tax abatement in NYC (ICIP)