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A River of Energy Solutions

Unbundling Utility Contracting: Opportunities and Challenges

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Agenda

- Energy Market Drivers and Trends
- Retail competition
- Energy efficiency programs

Energy Market – Trends Technology Drivers

New technologies will transform the gas and electric grid and its operations:
Distributed Energy Resources, Smart Loads, Electric Storage, and Electric Transportation



Generation

- Distributed Generation
- Renewable Energy Sources
- Hybrid configurations
 - Cogen, CHP, IGCC, Storage, etc.
- Fuel Switch, repower
- Efficiency
- Cycling flexibility

Storage

- Electric Storage
- Chemical, Mech.
- Utility scale
- Distributed
 - Ind., Com., Res.
- New Markets for:
 - Regulation
 - Capacity

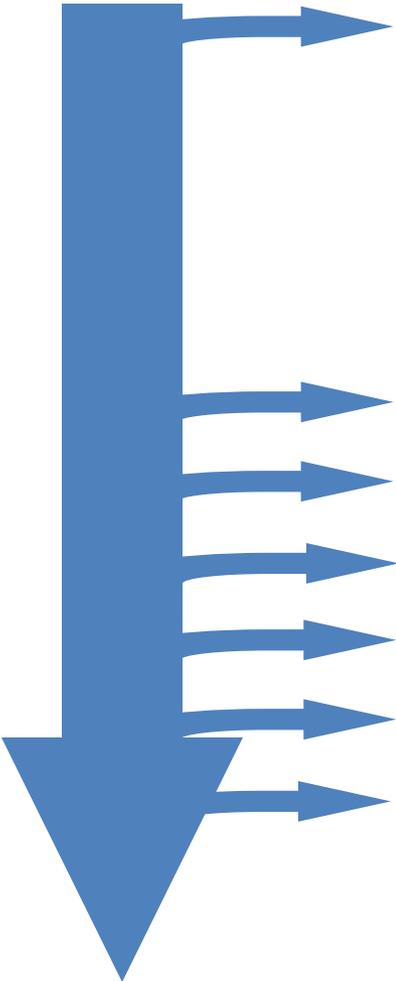
Smart Loads

- Demand Response
 - Auto DR
 - Dynamic DR
- DSM programs
- Smart Consumer
- Bldg 2 Grid (B2G)
- Smart Grid 3.0 transition
 - New control areas
 - VPP, Micro Grids...

E- Transport

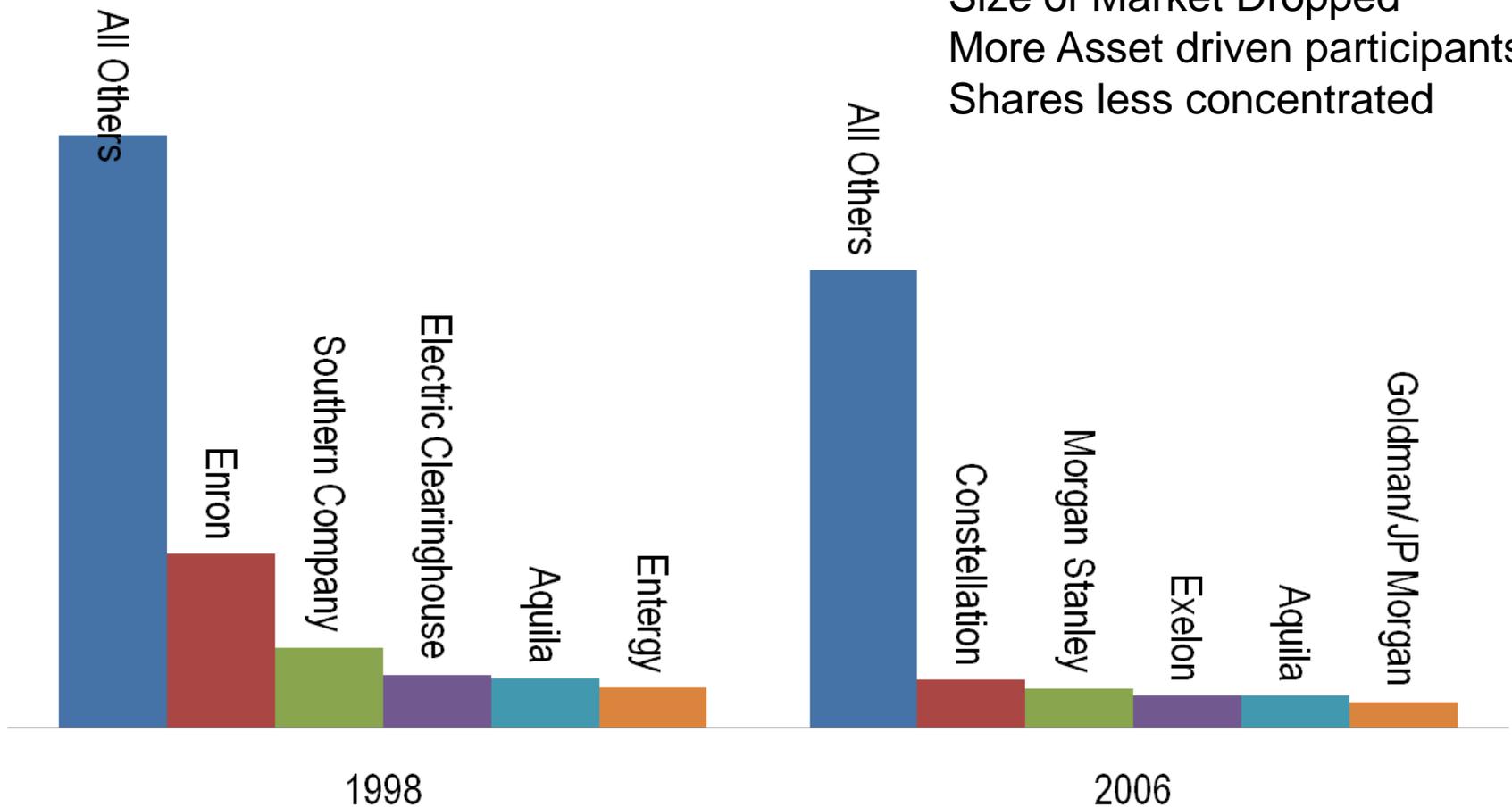
- Smart Charging
- TOU programs
- PHEVs
- Vehicle to Grid (V2G)
- E- Buses
- E- Fleet mgmt.

Unbundling Wholesale Transactions

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1. Energy Price
 - Day Ahead
 - Fuel
 - Heat Rate & Operating/Maintenance
 - Real Time Balancing
 2. Congestion Cost
 3. Losses
 4. Capacity Costs for Ancillary Services
 5. Transmission Cost
 6. Scheduling Fee
 7. Margins

Wholesale Marketers Have Changed

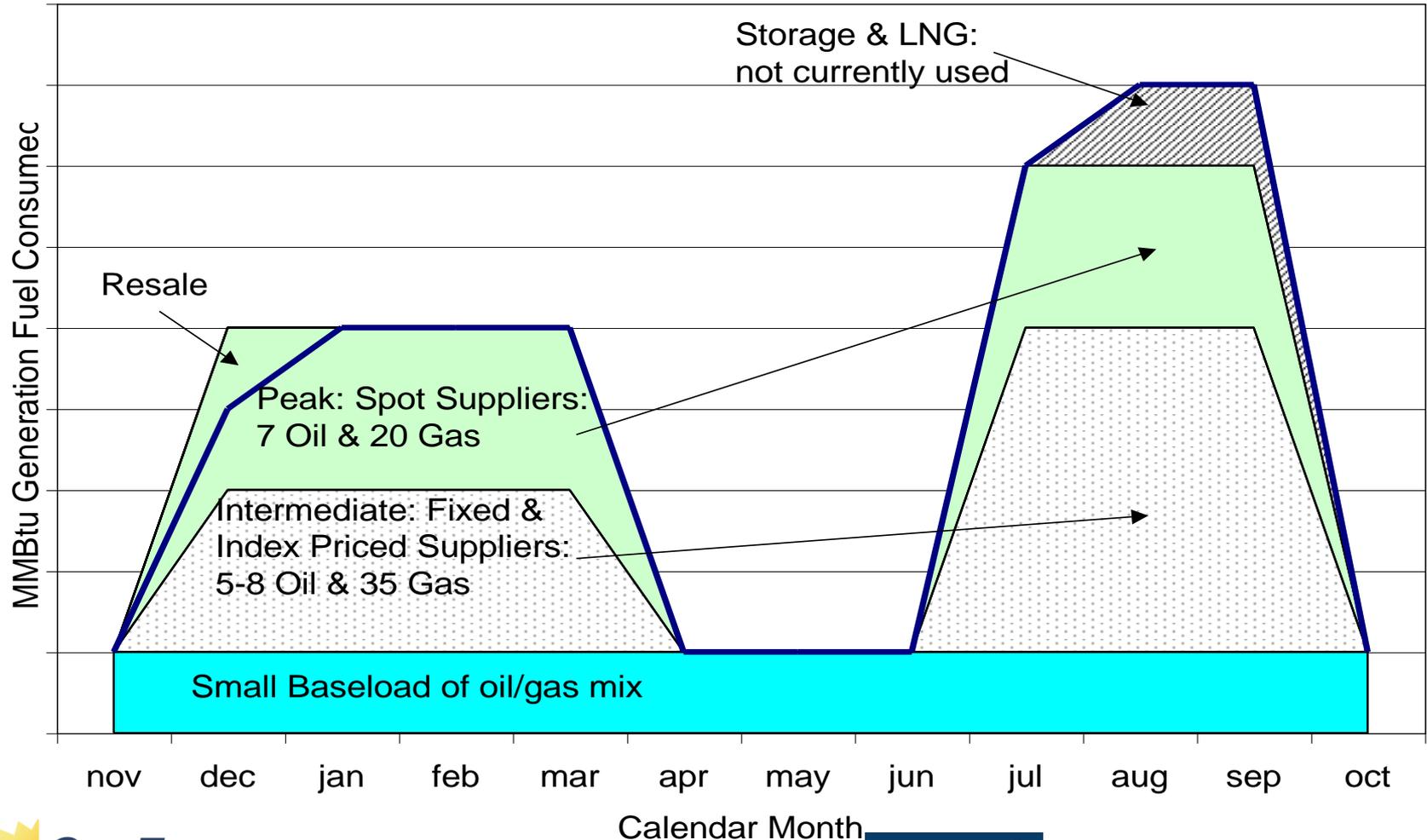
Size of Market Dropped
More Asset driven participants
Shares less concentrated



Credit Oversight by Third Parties

- Rating Agency Requirements
 - Portfolio stress tests and sensitivities to standard price shocks
 - Credit VaR
 - VaR under various scenarios
- Commodity Futures Trading Corporation
 - Monitor all price spikes in physical delivery markets
 - Price manipulation in electricity futures markets
- Federal Energy Regulatory Commission
 - Clearing is major concern
- Securities & Exchange Commission
 - Extensive disclosures on risk sponsored by the Committee of Chief Risk Officers

2000 Fuel Contracting Strategies Have Changed



New Wholesale Contracting Mechanisms

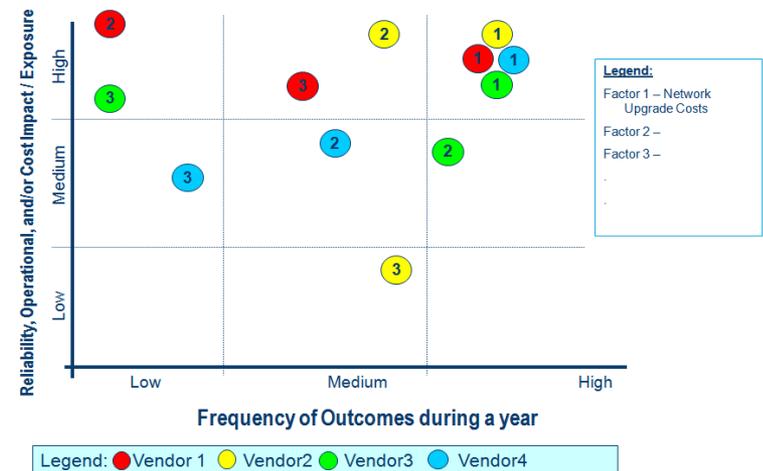
- Fixed Price
- Full Requirements
- All in Price
- Material Adverse Clause
- Index Nodal Price
- Maximum and Minimum
- Price unbundled: Energy, Transmission and Capacity/ Ancillary Services
- Credit

Top Criteria for Utility Vendor Selection

Criteria

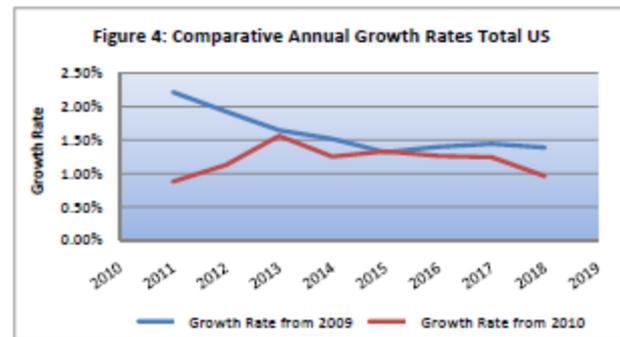
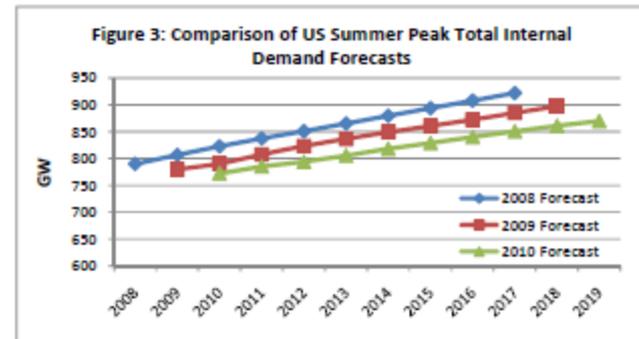
- Technical Capability of Generation & Equipment
- Transmission Interconnection Status
- Cost
 - Price
 - Life Cycle Costs
 - Length of Time to Commercial Operation
 - Renegotiation or Other 3rd Party Considerations
 - Operational Costs
- Ease of PPA Negotiation
- Firm Delivery
- Offering Future Enhancements
- Flexible in Delivery Options

Example Risk Map



Peak Reductions at Load Serving Entities Contracting Impacts

- Energy efficiency programs and economic challenges for Load Serving Entities
 - Peak load growth is smaller or negative, reducing need for capacity arrangements
 - RTOs have kept wholesale price spikes down



Source: NERC LT Assessment, October 2010

Green Energy Purchases Impacts

- “Green” energy ancillary service costs to balancing authority
 - Transmission and congestion costs
 - Balancing energy charges
 - Voltage fluctuations

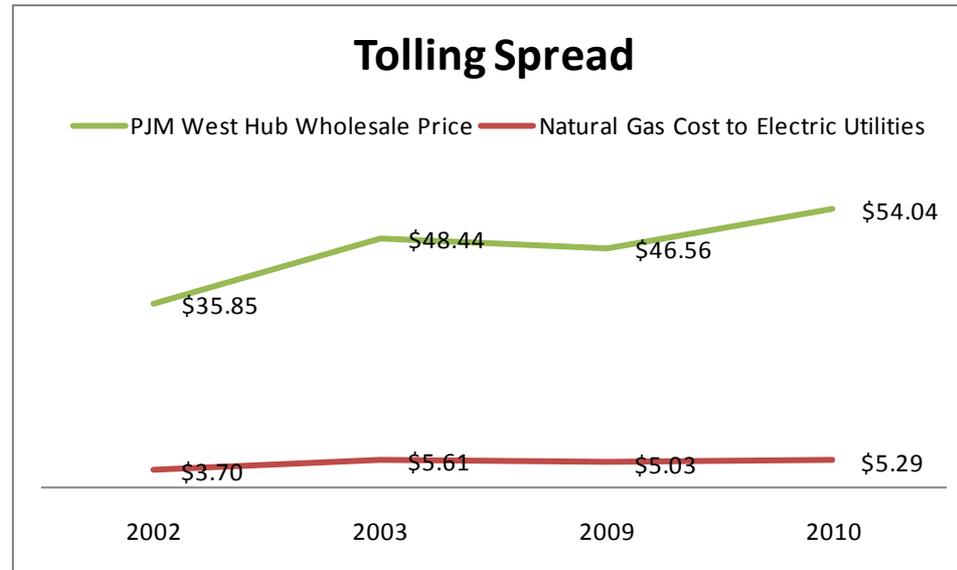


Managing Micro-Grids

- Smart Grid Enabling Technologies focus attention on micro grids
 - Information challenges to manage large number of small, diverse resources
 - Balancing energy charges
 - Voltage fluctuations



Tolling and Spark Spreads?



- Leasing an asset is less appealing on balance sheet
- Credit provisions
- Gas deliverability and pricing?

Retail Supplier Strategies

- With deregulation, non utility suppliers see opportunity to sign up customers
- Back to Back suppliers of small municipal and public power loads
- Smaller entities that “trade” around obligation
 - Sell to commercial & industrial customers at fixed price
 - Unbundle supply into components and trade around those components
 - Risk is increased to make margin on transaction
 - Common natural gas tools used include Trading Basis, Using Options, Swing Contracts, Storage Contracts

Retail Energy Efficiency Programs to Consider

- Energy Star Appliance Rebates incentives to retail customers for purchasing Energy Star replacement refrigerators, washers and room air conditioners.
- High Efficiency Central Air Conditioner Rebates programs to provide incentives to customers for installing Energy Star central air conditioning units, based on a sliding scale rebate dependent on unit SEER.
- Programs to discount CFL compact fluorescent lamps sold through retailers
- On-Line Energy Store Rebates for utility customers to purchase energy efficient products from a third party vendor at a discount. Energy Star New Home Construction Program
- Incentives for retail customers to qualify for Energy Star Home Certification with an Energy Star central air conditioning system.
- Residential Direct Load Control to provide bill credits for residential customers participating in a/c cycling.

Commercial Energy Efficiency Programs to Consider

- Commercial Lighting Rebates
- Commercial Motor Rebates
- Commercial HVAC Rebates
- Custom C&I Energy Efficiency Programs