Merchant Power:
Market Optimism Following Distress

Developments in the Merchant Power Sector

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Agenda

Overcoming obstacles, the path to a viable merchant market

Trends in the merchant generation sector

Drivers of value

Disclaimer:

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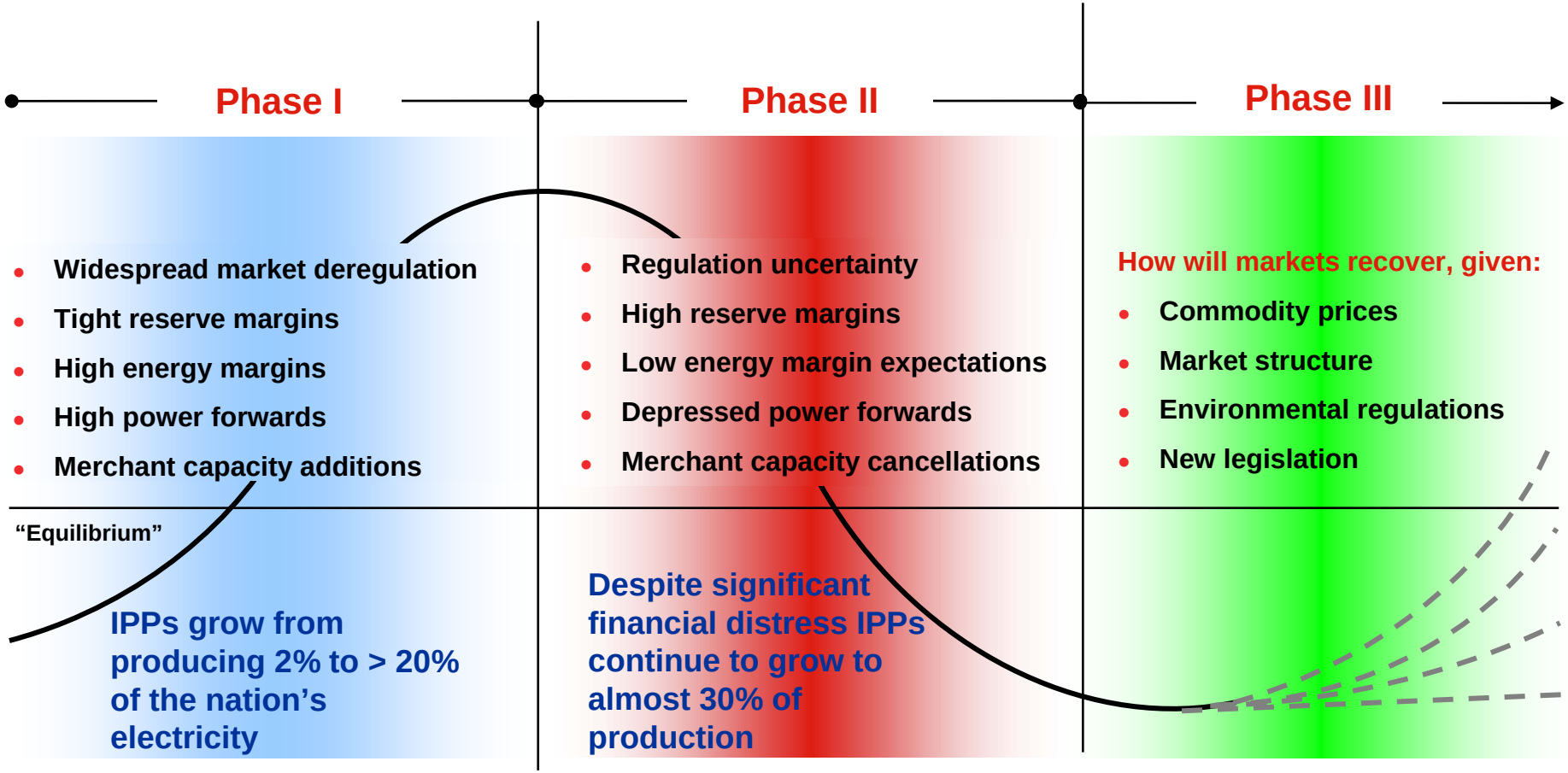
Overview

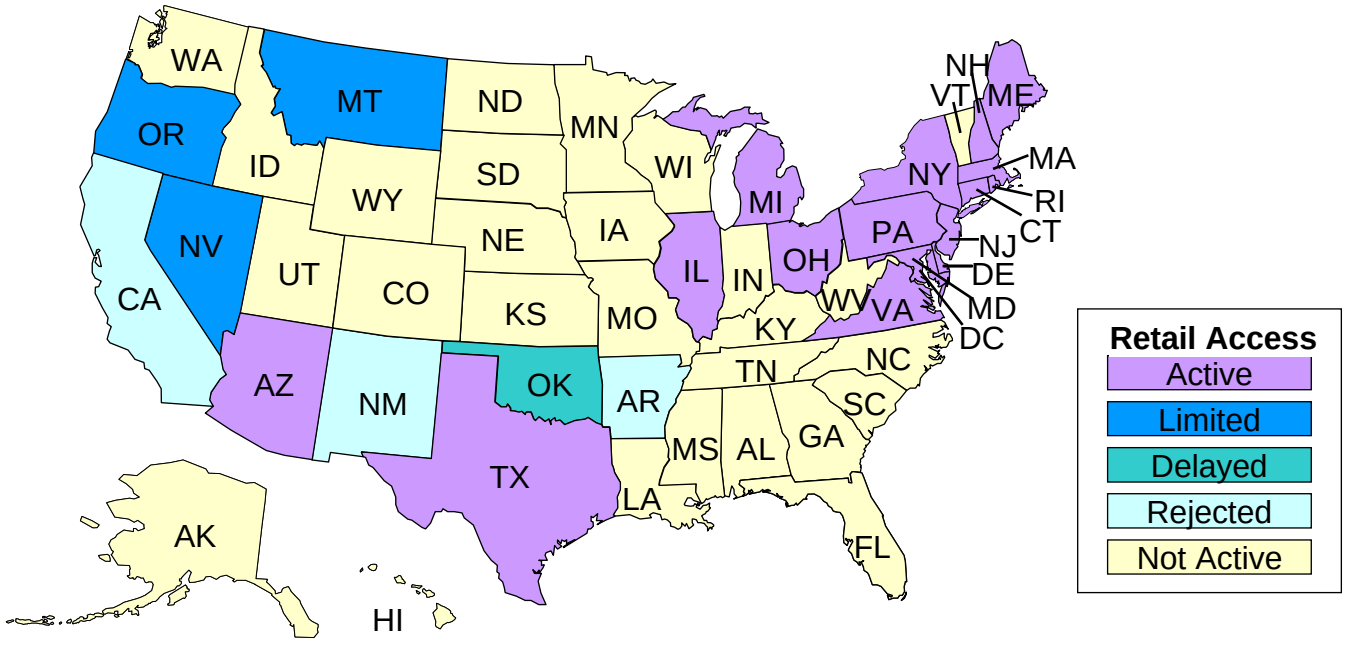
- The merchant sector has seen significant growth in installed capacity over the past seven years despite the fact that the growth has followed a path that few – if any – forecasted.
- Asset activity has picked up in US markets, creating significant interest in investment in the sector by both strategic and financial players. However, the market will continue to be volatile and the risks and opportunities are both region- and asset-specific.
- Market volatility is likely to continue to redistribute value among the investors:
  - price volatility results from volatile fuel prices
  - continued and potentially newly created supply and demand imbalances
  - potential entrance of significant amounts of non-gas-fired generation
  - likely CO_2 legislation that will affect retrofit decisions, fuel costs and – ultimately – build-plan decisions.
- Several factors need to be considered in reviewing asset investment decisions as well as evaluation approaches.

Wholesale market structure development is occurring in conjunction with a cyclical industry structure



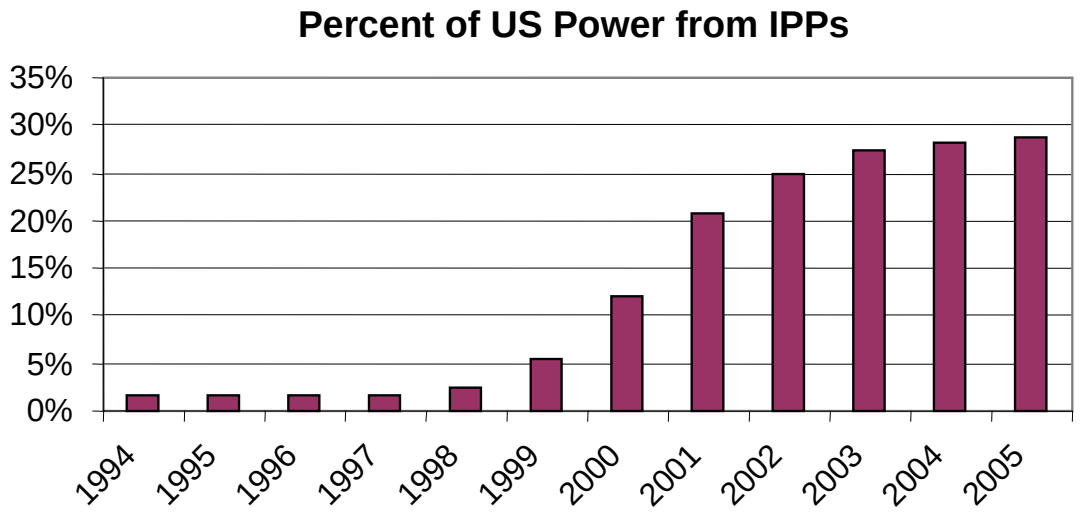
There have been multiple paths to wholesale competition

- While federal policies regarding non-discriminatory access is a necessary part of the equation for creating viable wholesale markets, state policies towards retail competition and IOU resource acquisition have been key drivers:
  - Competitive wholesale procurements for vertically integrated utilities are becoming more common, creating opportunities for developers
  - There are active competitive wholesale markets in the Northeast and Texas, along with contracts to serve default load.
  - Competitive procurement for retail load is emerging in some deregulated markets.



The growth of merchant power was fueled by natural gas and leveraged finance

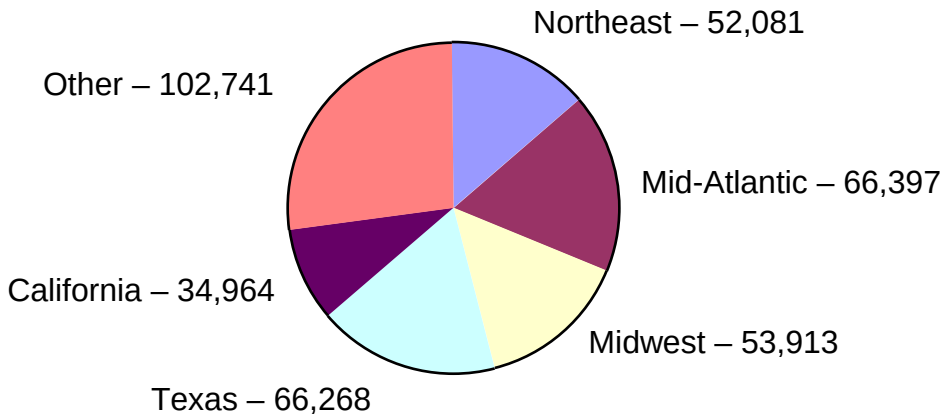
- Of the 150 GW of merchant generation that came online in 1999-2005, 94% was gas-fired.
  - Despite the ability to bring this generation online quickly, there were a number of pitfalls, including EPC performance, lack of transmission access for completed assets, and lack of competitive markets in which to sell power.
  - Too much generation was added in an industry that typically has annual load growth rates in the 1.5-2.5% range.
  - Then there was the liquidity crisis.
- How will the next generation of merchant participants protect themselves from this cycle?



Retail restructuring has created the largest merchant opportunities

- Approximately 38% of the US generation capacity is located in states with retail restructuring and over 60% of the IPP generation is located in those states.
- Creation of proposed capacity markets in the Northeast and the Mid-Atlantic region is anticipated to stabilize revenues for a significant number of generators.
  - Forward capacity markets do not guarantee capital cost recovery, the risk remains at a reduced level.

Distribution of US IPP Operating Generation Capacity



The Northeast, Mid-Atlantic, and Midwest groupings are limited to states with retail restructuring

Source: EIA 860 data.

Transactions reflect ongoing restructuring

Strategic exit:
- sales of generation in vertically integrated power markets
- sales of generation by financial players

Repositioning:
- Reducing the merchant position and strengthening the balance sheet
- Adjusting the portfolio balance

Growth:
- Increasing concentration by major players

Strategic entrance:
- international players looking for a long-term position in the US markets

The merchant market is long on buyers

There are significant numbers of private equity investors interested in the merchant market along with major players with various roles:

- *Spark Spread* lists approximately 36 GW of generation for sale with 80% of the capacity offered by seven major sellers:
  - The largest piece is a TXU sale of approximately 10 GW of gas-fired assets in Texas.
  - Other major deals include: Mirant, Constellation, El Paso, Reliant, Progress Energy, and Dominion.
- Private equity investors will be in competition with major merchant strategic players including Dynegy/LS Power, NRG, and EME:
  - There are opportunities for private equity investors to participate with strategic players.
- A large number of buyers had expressed an interest in Calpine assets:
  - Nine bidders submitted bids in the sale of the 170-MW Dighton plant in New England which sold for $530 / kW.
- Expectations of purchasing assets at distressed prices have mostly faded as the balance sheets of sellers strengthen and the market becomes a seller's market.

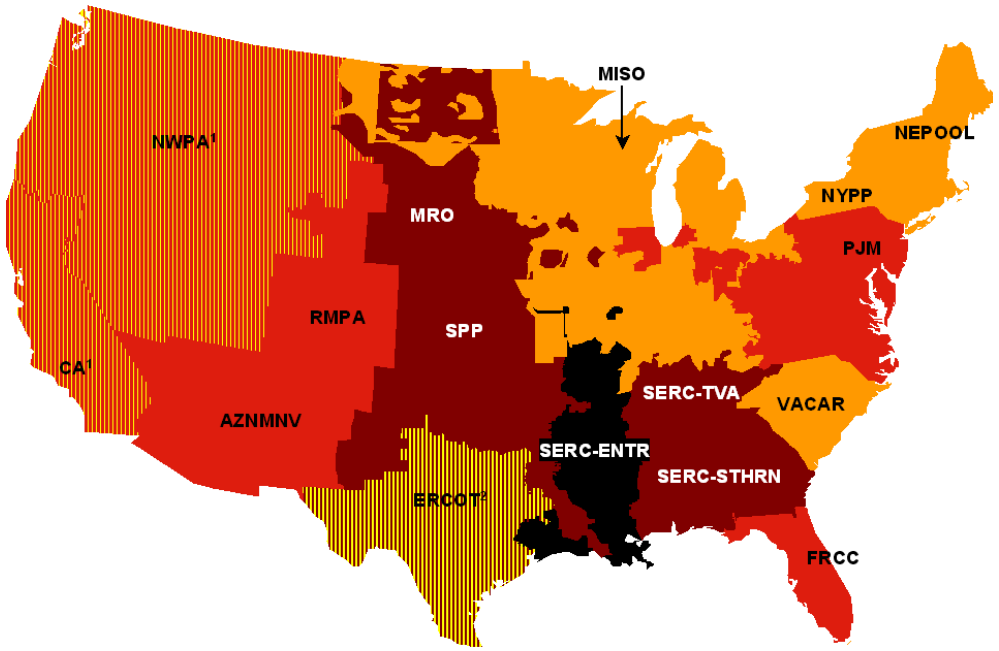
Many of these opportunities have come on the tail of large numbers of bankruptcies

In today's hot market for generation, it is important to remember the recent destruction of debt and equity value and that recovery is region-specific:

- The four major merchant energy companies that went bankrupt (NRG, PG&E NEGT, Mirant, and Calpine) had approximately $55 billion of debt prior to bankruptcy.
- Eight major US merchant energy companies, excluding Enron, had lost over $130 billion of equity between 2001 and 2003.
- Financial distress led to the sale of distressed assets by major merchant energy companies, including Dynegy, Reliant, Aquila, Allegheny, El Paso, and AES.
- Many of the buy-side opportunities will create significant wealth for the financial players who bought distressed debt at discounted prices.

In the current period of exuberance there are still bankruptcies to address

- The large “legacy” bankruptcy of Calpine is seen as an opportunity by others with significant interest in certain assets.
- There are smaller projects in over-built regions without retail restructuring that are in or on the verge of bankruptcy.

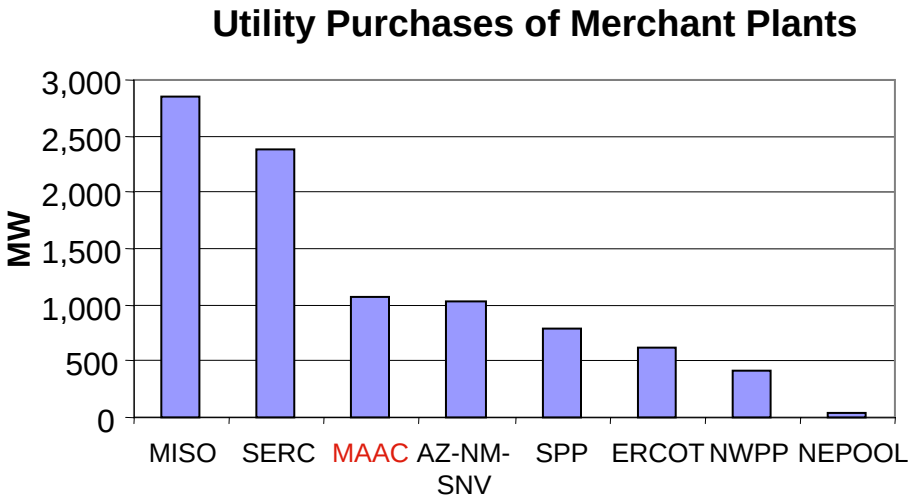


Capacity Deficit → Severe Overbuild

Reversing the trend … transfer of IPP power to utilities

In regions without retail restructuring or active wholesale assets, a number of projects have been sold to the "natural buyers" – the vertically integrated public and investor-owned utilities.

- Merchant power plants have been sold to retail utilities "back in the business" of resource acquisition:
  - Over 9 GW have been sold to IOUs, public power entities, and cooperatives.
  - The degree of the loss of investor value has been both time- and location-dependent.
  - In some cases there are were only a few logical choices of assets for the utility to purchase.

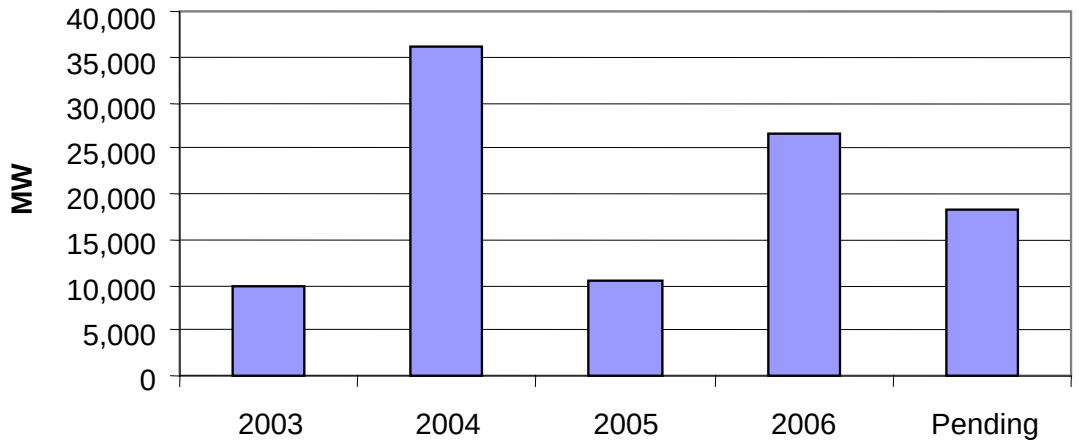


At the same time there is a seller's market

The fire-sale of distressed generation never happened on a large scale. Large and small deals are reflecting significant confidence in the market:

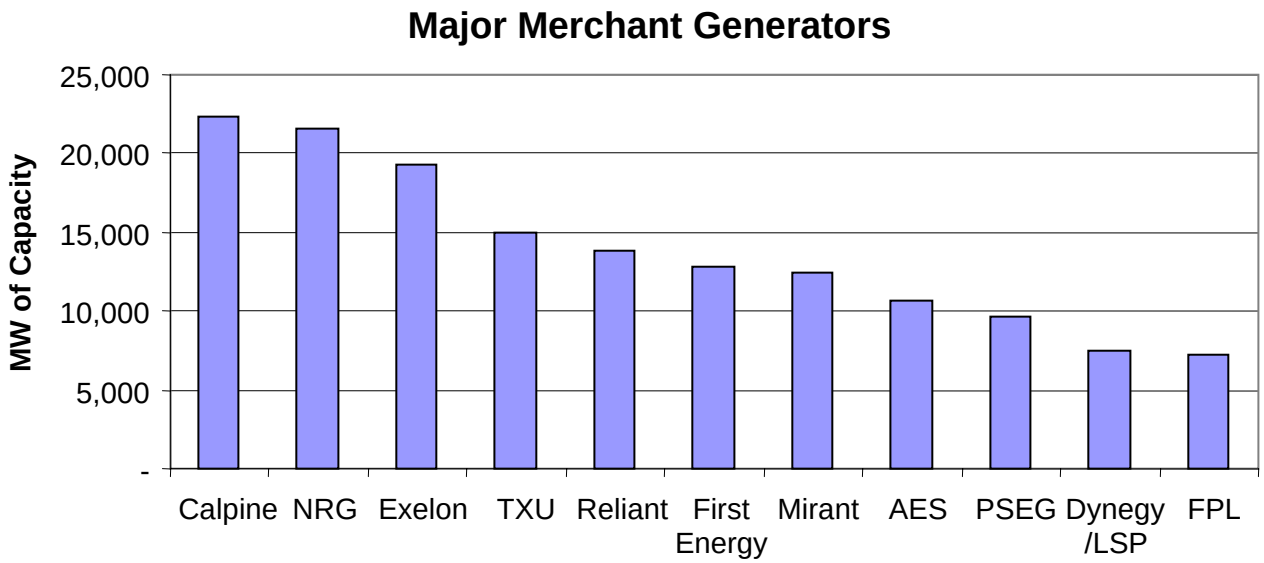
- Over 100 GW of transactions have occurred or are pending:
  - A reflection of the turnover in the market is that almost 25% of those transactions reflect resale of assets bought in the last 3½ years. (Texas Genco and AEP assets reflect the bulk of the resold assets.)
  - "Resale" numbers exclude the Dynegy/LS Power proposed transactions.
  - There is strong interest in the Northeast. The Dighton sale attracted significant interest. On the heels of the interest in Dighton is the wave of announced additional sales (Lake Road, MassPower, EBG Holdings, Granite Ridge).

U.S. Power Plant Transactions



The drive towards growth and economies of scope and scale

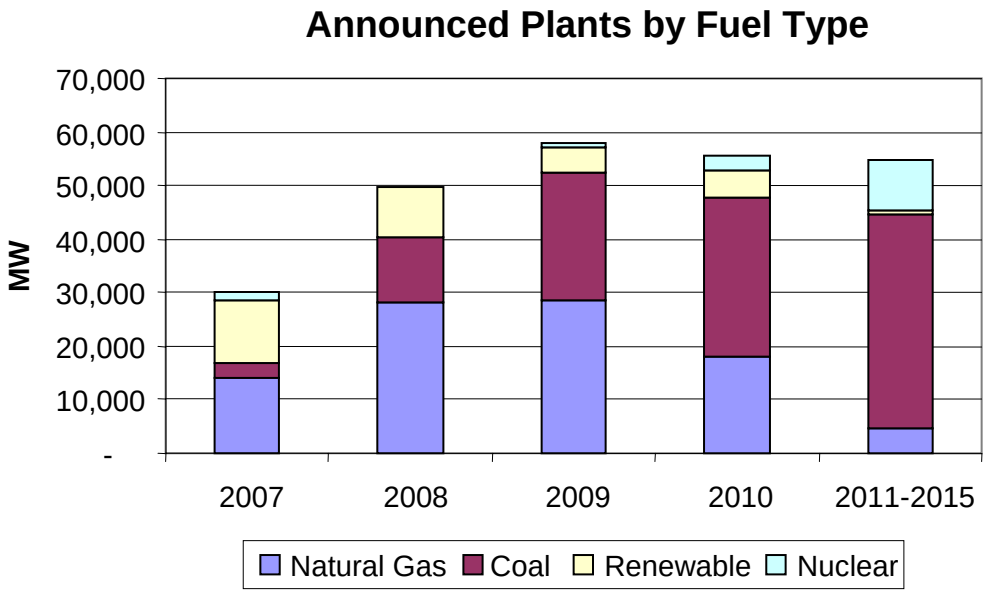
- Consolidation of merchant companies:
  - NRG acquisition of over 14 GW of generation from Texas Genco
  - LS Power acquisition of about 8.8 GW of generation (including 5.6 GW of DENA assets) and then sale/partnership with Dynegy
  - Strategic exit from the sector and repositioning:
    - over 4 GW of generation acquired by financial players in the prior three years are back on the market
    - Progress Energy, Mirant, and others



Fueled by abundant capital and aggressive positioning, merchant development is going strong

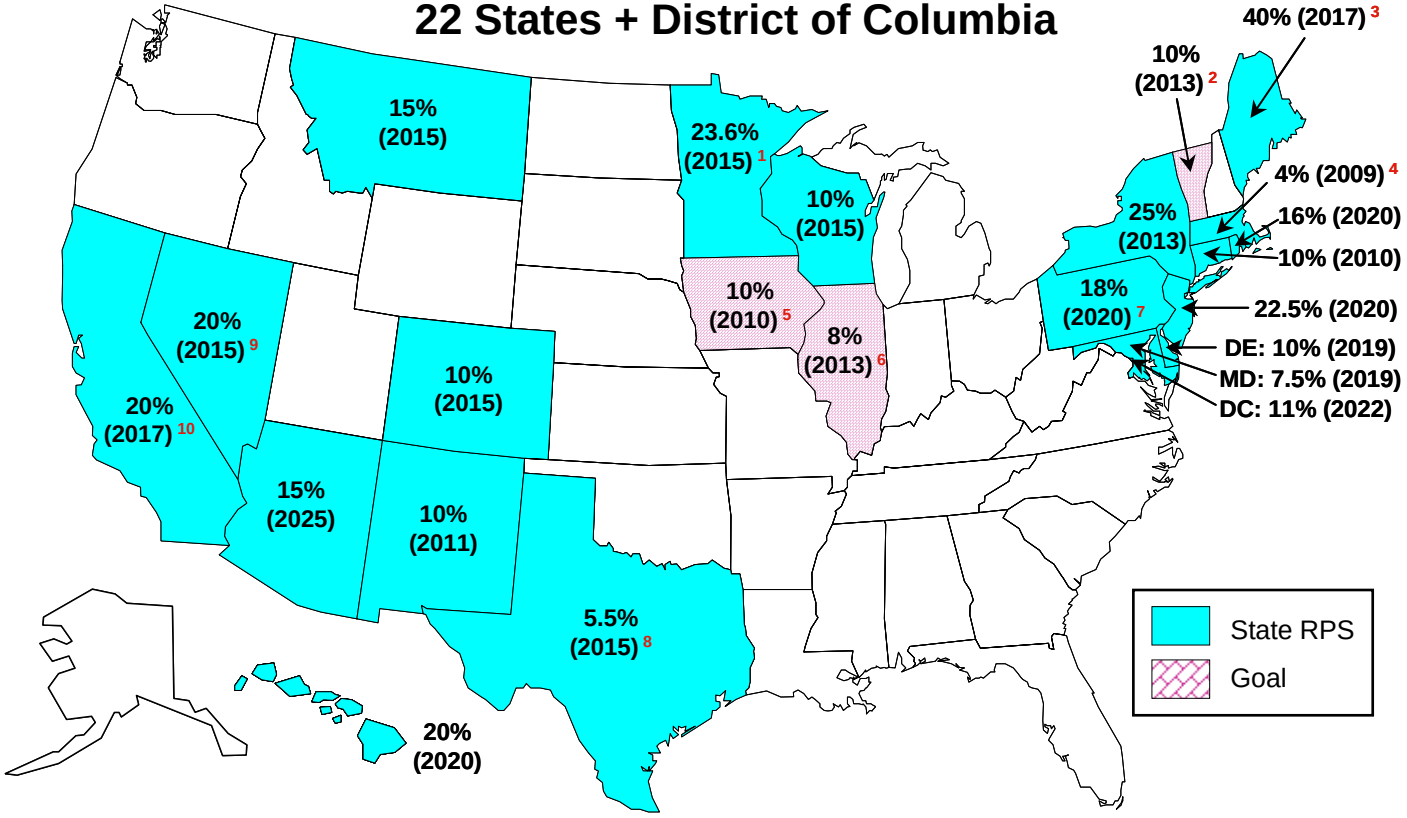
- Merchant generation development is still alive with new generation coming online in the Northeast, Texas, and California:
  - Approximately 25 GW of gas-fired generation is under construction or in the advanced stages of development.
  - Well-capitalized merchant generators are joining utilities in pursing new coal generation:
    - TXU, NRG, LS Power are among the leading non-utility coal developers.
  - PPAs with utilities and financial players are being used to secure revenue streams and high leverage.

Note:
Announcements do not necessarily mean these plants will be built.



RPSs and consumer demand are creating opportunities for IPPs and can threaten high heat rate units

- Over 5 GW of merchant wind came online in the last five years with FPL the leader.
  - 22 states have enacted renewable portfolio standards (RPSs).
  - Standards differ by state, including what constitutes a renewable resource.



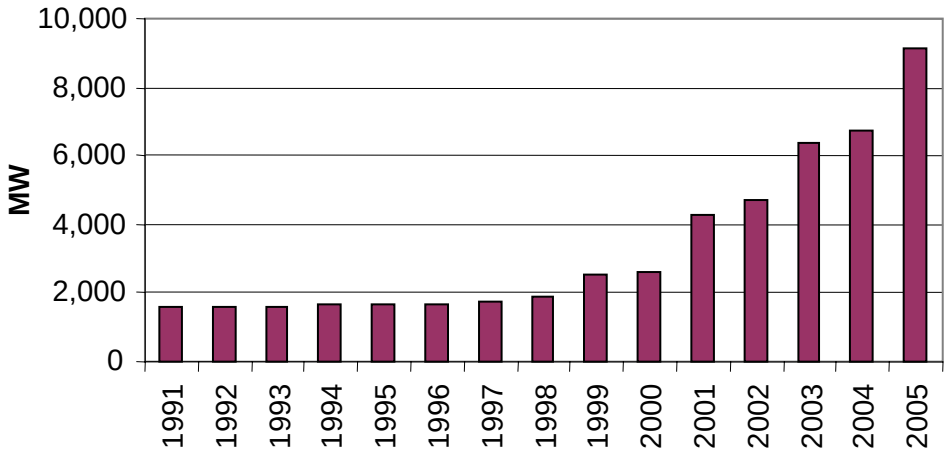
[1] **MN** = 125 MW biomass + 1,125 MW wind (2011) for Xcel + 10% (2015) for other utilities
[2] **VT** = goal of 10% of 2005 sales (2005-2012)
[3] **ME** = 30% from gas or renewables + 10% increase in renewables 2007-2017
[4] **MA** = plus 1% per year after 2009
[5] **IA** = goal: 1,000 MW by 2010; law: 2% by 1999
[6] **IL** = voluntary standard set by ICC
[7] **PA** = 8% Tier I & 10% Tier II (2020)
[8] **TX** = 5,880 MW by 2015; 10,000 by 2025
[9] **NV** = up to 25% can be energy efficiency; solar must be at least 5% of annual
[10] **CA** = proposed goal 10% by 2010; 33% by 2020

Sources: Database of State Incentives for Renewable Energy (DSIRE), PA Consulting Group research, and the Union of Concerned Scientists.

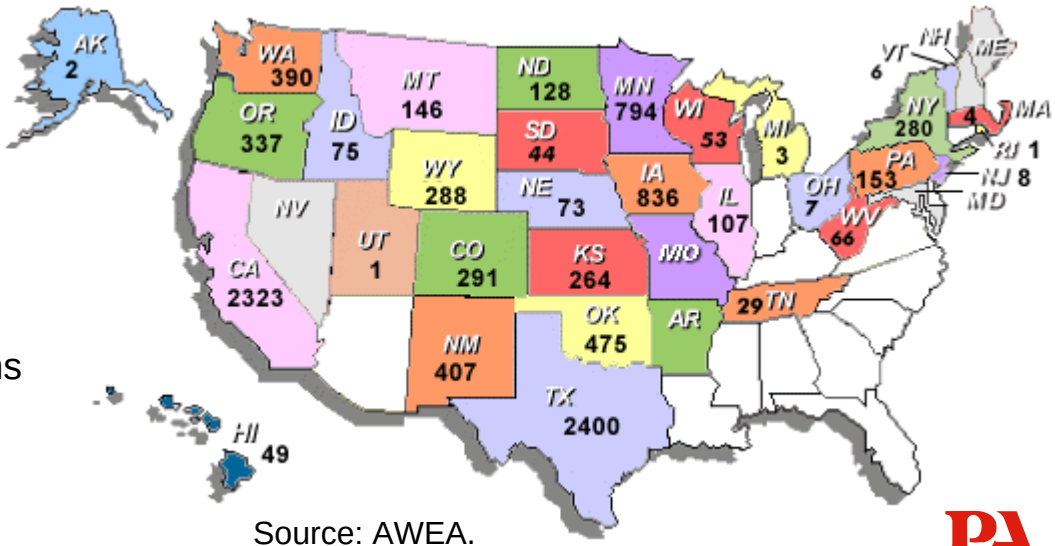
Wind generation's dramatic growth

- Wind generation has taken off with the extension of the PTC, higher gas prices, and RPS.
- Limitations on growth:
  - transmission constraints
  - availability of turbines.
- AWEA estimates that wind will grow from producing less than 1% of US production today to producing over 6% by 2020:
  - implies over 100 GW of new capacity
  - far more than most conventional forecasts
  - pure merchant wind farms starting to come online.

Installed U.S. Wind Capacity



Installed Wind Capacity (MW)



Source: AWEA.

Determinants of value

The merchant market continues to grow in capacity and there is significant competition to move into the business.

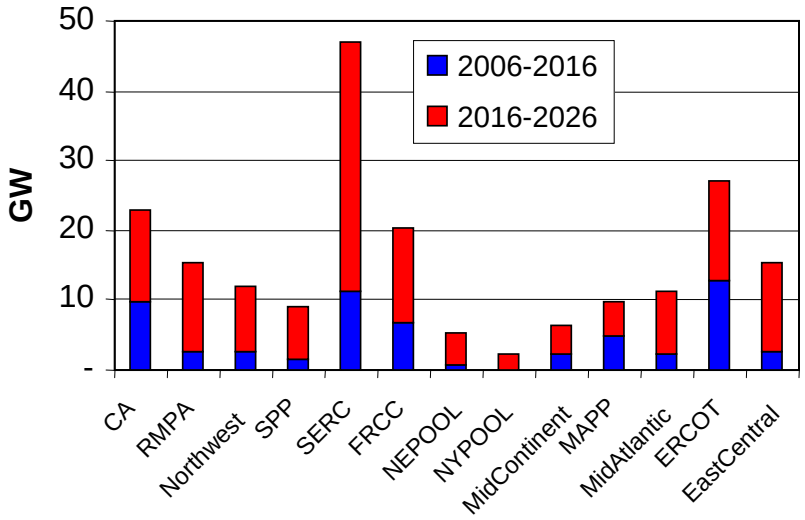
How does one determine value?

- market fundamentals:
  - new entrant's economics
  - capacity markets
  - assumptions about environmental regulation
  - new technologies
- replacement costs
- earnings analysis and EBITDA multiples
- market values:
  - trading of debt
  - comparable sales
- market momentum

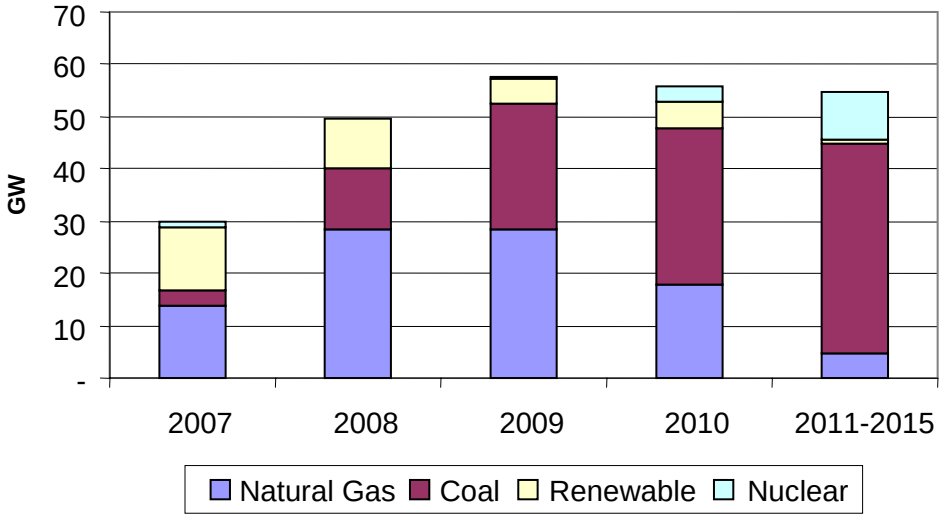
Will there be a return of market exuberance and high reserve margins?

- US load growth is estimated to be 1.7% annually over the next ten years.
- Based on the EIA 2006 forecast of load and generation retirements, approximately 61 GW of new generation will be needed in the next ten years; however, announced plants exceed 261 GW for that period.
- Timing for the need for new generation is region-dependent.
- Strategic assessments regarding what generation will be built is critical to estimating returns.

New Capacity Additions



Announced Plants by Fuel Type

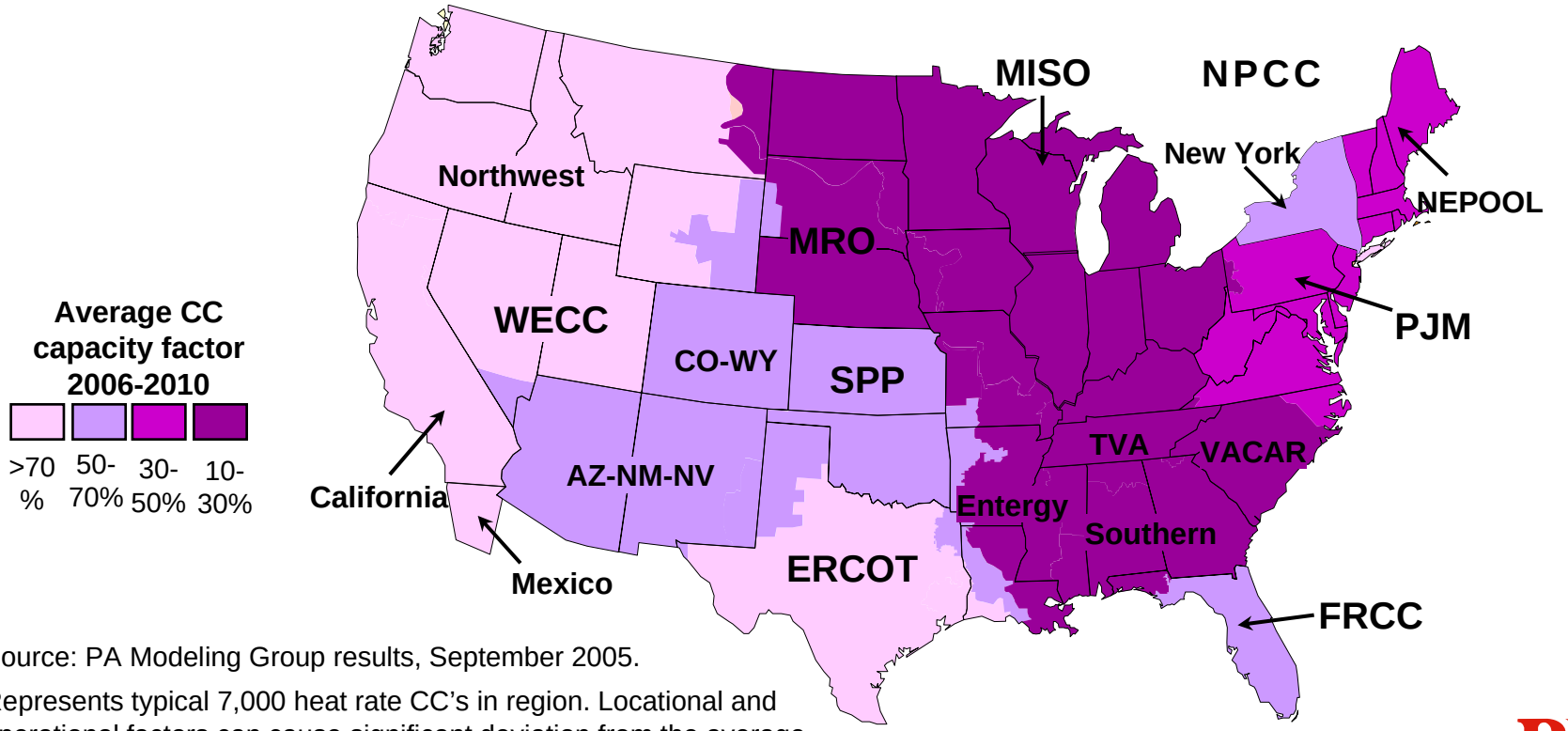


Source: EIA 2006 AEO Forecast.

The prospects for the existing fleet of merchant gas generation are region dependent

- New coal, nuclear, or renewable generation has the potential to further impede the recovery of gas generation resources – despite load growth.
- Carbon regulations are a big unknown with regard to impact on increasing value.

Combined Cycle Capacity Factors

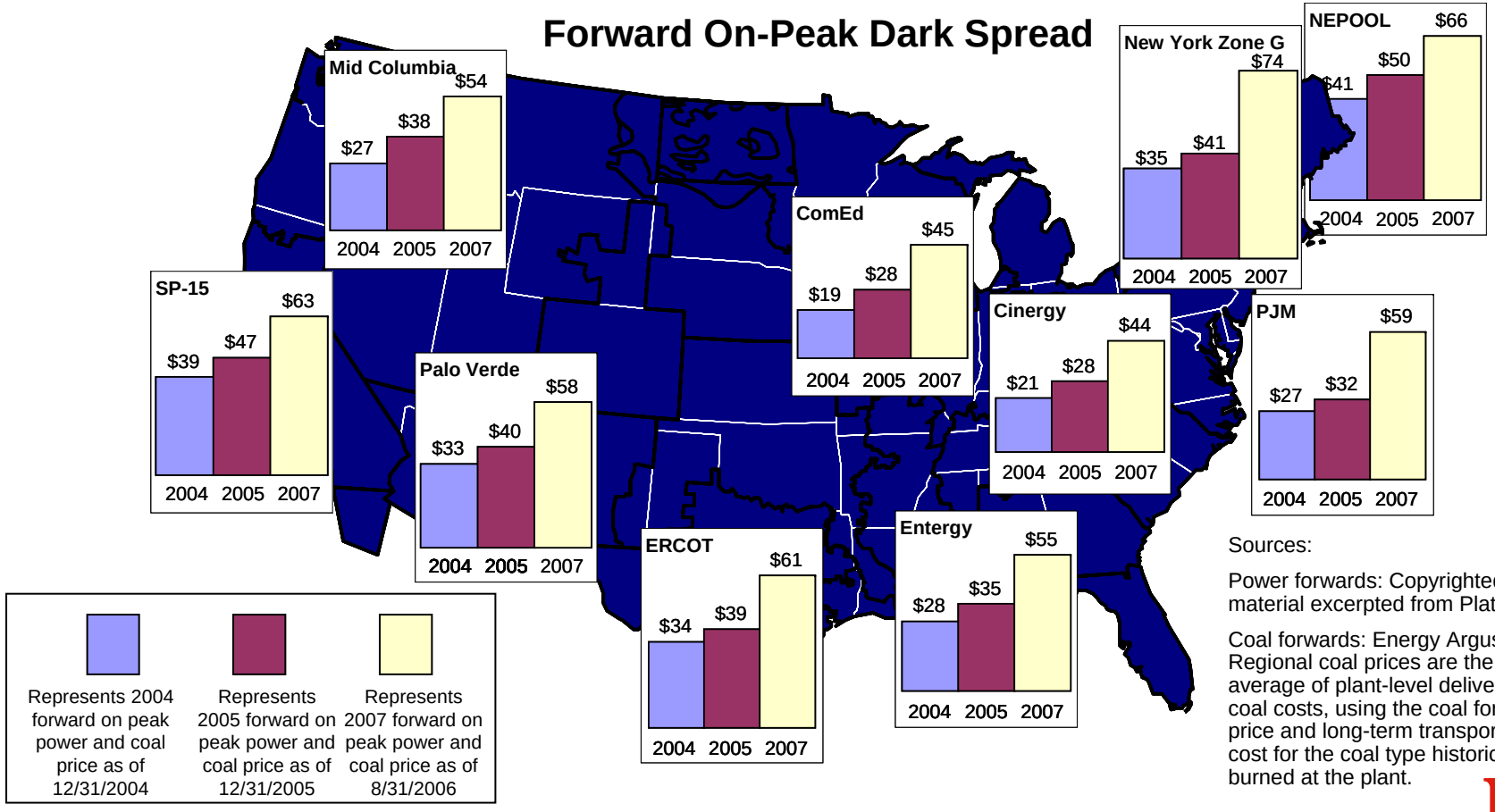


Source: PA Modeling Group results, September 2005.

Represents typical 7,000 heat rate CC's in region. Locational and operational factors can cause significant deviation from the average.

Will dark spreads continue to support high valuations?

- Forecasts for natural gas prices and the time that gas is setting the market price are key value drivers.
- Environmental regulations including carbon need to be considered



Sources:

Power forwards: Copyrighted material excerpted from Platts.

Coal forwards: Energy Argus, Regional coal prices are the average of plant-level delivered coal costs, using the coal forward price and long-term transportation cost for the coal type historically burned at the plant.

Real $2004 /MWh. Dark spread represents power less delivered coal price. Assumes a 10,000 heat rate.

Working environmental considerations into the equation

Costs of retrofits for compliance are often unknown and retrofits are being delayed with the expectation of lower EPC costs in the future:

- Tighter regulations for NOx and SO_2:
  - Clean Air Interstate Rule (CAIR), finalized March 2005, requires power plants to upgrade their facilities to reduce SO_2 and NOx emissions
  - Generators located in non-CAIR states will continue to be regulated by current federal law.
- Pending regulations for mercury:
  - The EPA's Clean Air Mercury Rule (CAMR) cap-and-trade program has been finalized, but not yet promulgated.
  - Several states have decided to opt out of the federal CAMR program in lieu of more stringent state restrictions on mercury emissions.
- Carbon is the big unknown on the horizon:
  - Pressure is growing on the US to act as foreign nations continue to push forward with mandatory greenhouse gas reduction programs
  - States are implementing their own mandatory carbon reduction programs.
  - Supporters would likely prefer to level the playing field with a federal program over a "patchwork" of state programs.
  - Assumptions about credits are as important as assumptions about controls.

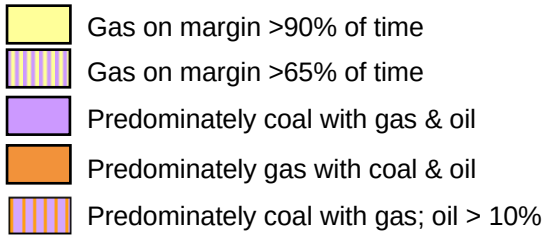
While the nuclear resurgence is uncertain, it would change certain market dynamics

- License extensions and up-rates of existing nuclear power plants are definitely part of the resource mix:
  - 78 of 103 operating nuclear plants have filed for or received license renewals.
  - Approximately 2.9 GW of up-rates have been approved and another 1.9 GW are expected.
- There has been significant activity regarding filing for Construction & Operating Licenses (COLs) and public announcements. What are the prospects?
  - Approximately 11 companies have announced plans for up to 20 new nuclear reactors. The NRC is anticipating 29 license applications before the end of 2008
  - Large well-capitalized players have announced intentions, including Dominion, TVA, Entergy, Southern, Progress, Duke, and NRG.
  - Will there be a race for Federal Production Tax Credits of $18/MWH for the first 6 GW and federal loan guarantees?
  - Opposition in some groups diminish as a result of lower emissions associated with nuclear power, but fuel disposal remains an unresolved issue.

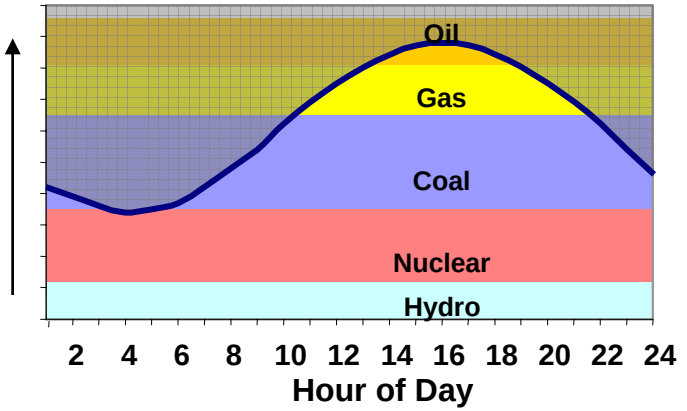
Leaving long-term forecasts behind and valuing assets on replacement costs and EBITDA multiples

One measure of value is replacement costs and short-term forecasts until the time that new generation is required. The simplicity of this approach and the need to avoid the uncertainties associated with long-term forecasts masks some key valuation concerns, including:

- Cost of construction, at least in the near term, is increasing due to a number of factors. What are long-term replacement costs?
  - Are brown-field coal plants $1,100/kW as described by TXU or in the range of $1,500/kW to $2,200/kW?
  - Are replacement costs for gas generation $675/kW or $900/kW?
  - How will technological obsolescence, H class, and other advances impact the value of F class units?
- Market structure changes: fuel prices and market heat rates have a significant impact on EBITDAs.
- Value of trading on volatility.



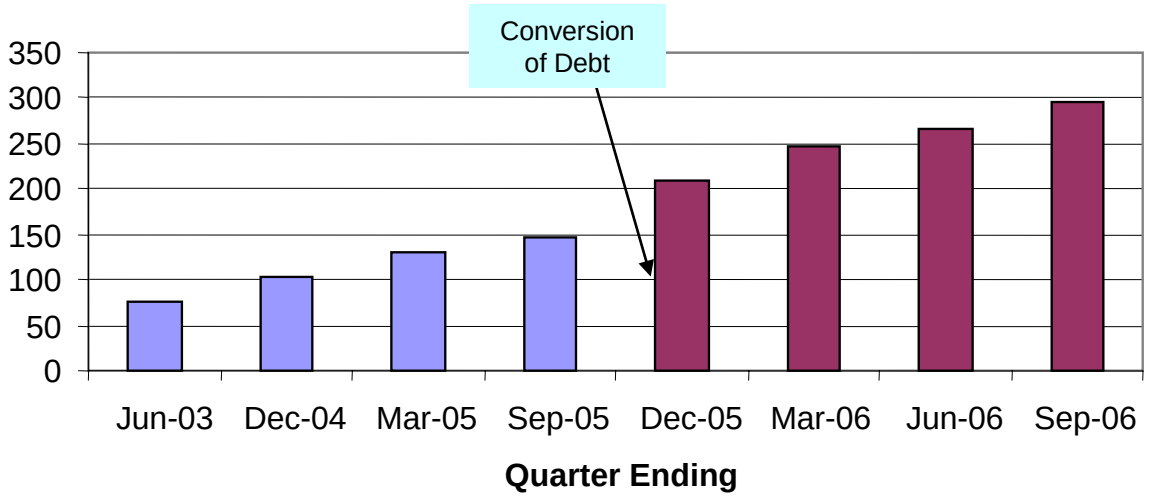
Sample Day of Market Dispatch (SERC example)



Turning to the market to derive asset values

- Comparable sales:
  - Issue of determining comparables based on regional differences and incomplete information about the transaction.
  - Lack of transactions: bias created by distressed sales a few years ago or potentially exuberant purchases.
- Debt and equity trades – the market has had an accelerated view of value recovery:
  - Key events along the path to recovery include the development of a capacity market mechanism for NEPOOL.

Market Valuation of New England Generation



Navigating through the next stage of merchant power

- While concentration in inevitable, there is no evidence regarding the minimum size necessary to manage a profitable portfolio
  - There is significant private equity looking for entrance into the market
  - Players still long for strategic combination of energy sector assets
- There are some clear benefits to size, including:
  - regional diversification
  - management of fuel procurement and maintenance costs
  - generation mix diversification.
- Quantification of the above benefits in the framework of developing a bid "premium" requires relatively complex optimization analysis.
- While there is no evidence that buyers are over-paying for assets, the ever-growing optimism in market sentiment sends up a caution flag to move beyond current market values and short-term valuation approaches.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