# Investment in power generation:
# A banker's perspective

March, 2003

# Summary

- What happened in 2002 and what we learned
- U.S. Power Industry
- U.K. Power Industry
- Emerging Markets
- Conclusions and The Way Forward

# What happened in 2002 and what we learned

# What we thought we knew

- Financial crises have occurred in the past ….
- We thought the rules of deregulation and competition in the power industry in the U.S. and U.K. were well understood and that deregulation could serve as the profitable foundation for a merchant power business.
- We thought parent companies would support their unregulated subsidiaries in the U.S. and U.K. and around the world….
- We thought developing countries which needed to attract capital for future infrastructure needs would not act irresponsibly towards existing projects.

# What Actually Happened

- Power prices collapsed in the U.S. and U.K.
- Major industry players that invested heavily in merchant power and trading have collapsed or are struggling to survive
- The economic crises in Argentina, Brazil and other emerging markets have devastated some of the best companies focused on emerging markets infrastructure
- Investors have abandoned major portions of the infrastructure business in both the developed world and the emerging markets
- The growth market for 2003 in power is the restructuring and workout of existing companies and assets. Purchasing distressed power assets is indeed a profitable opportunity for new money investment
- Better models need to be developed to attract capital into critical sectors and countries where new projects will be needed

# Disengagement of Investors and Lenders

- Lenders and investors thought they understood the rules governing the power system when they invested. The destruction of the clear understandings investors thought they had has caused them to abandon the sector, resulting in a collapse of equity and debt prices
- This disengagement will last until a new understanding of a new reality is gained and confidence is restored that this understanding will not be shattered again
- This will require time and patience
- Regulators need to create a climate of stability in which reasonable expectations of investors can be fulfilled

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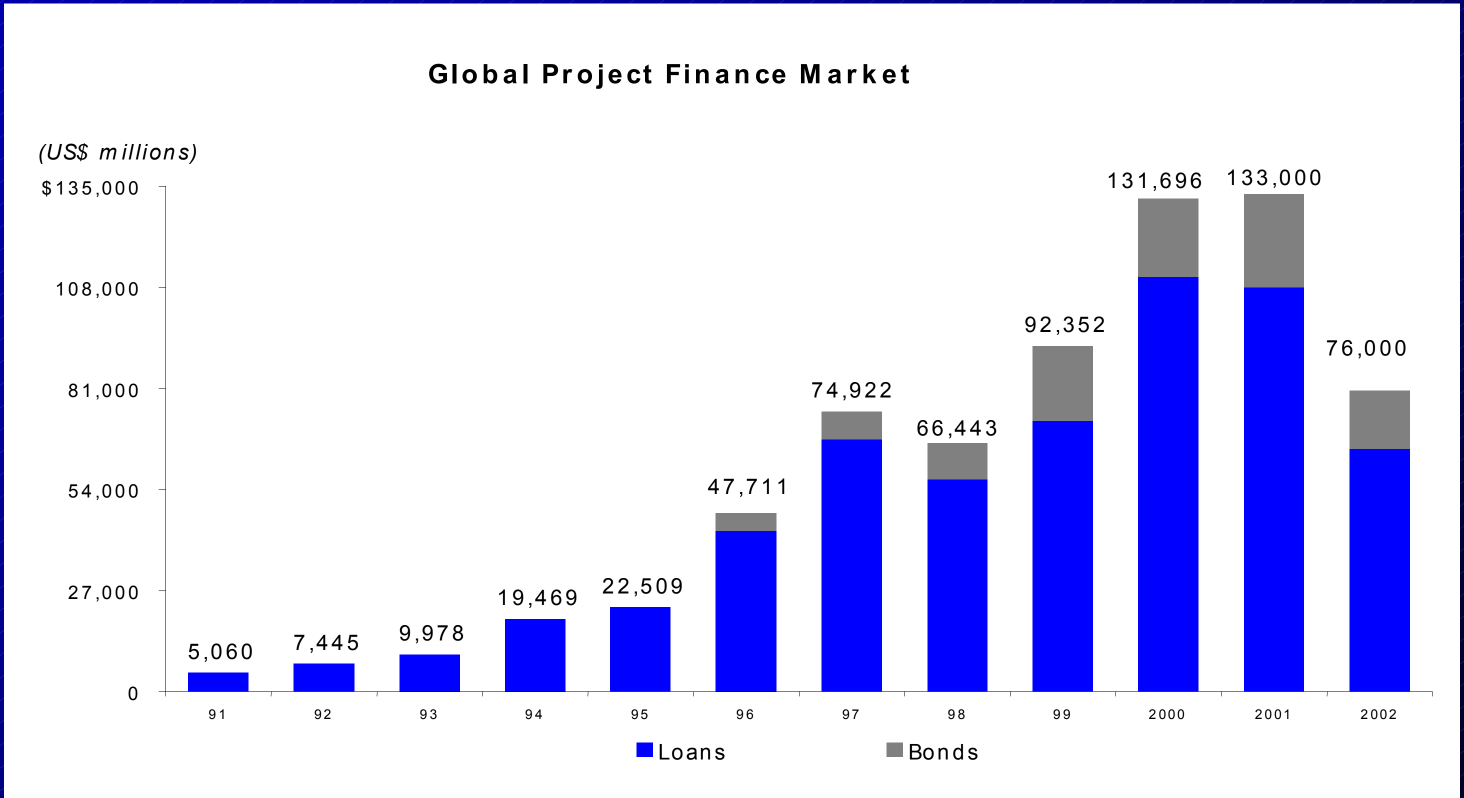
# Debt Issuance Dries Up

- Debt issuance (bank and fixed income) in 2002 declined 42% to $ 76 billion

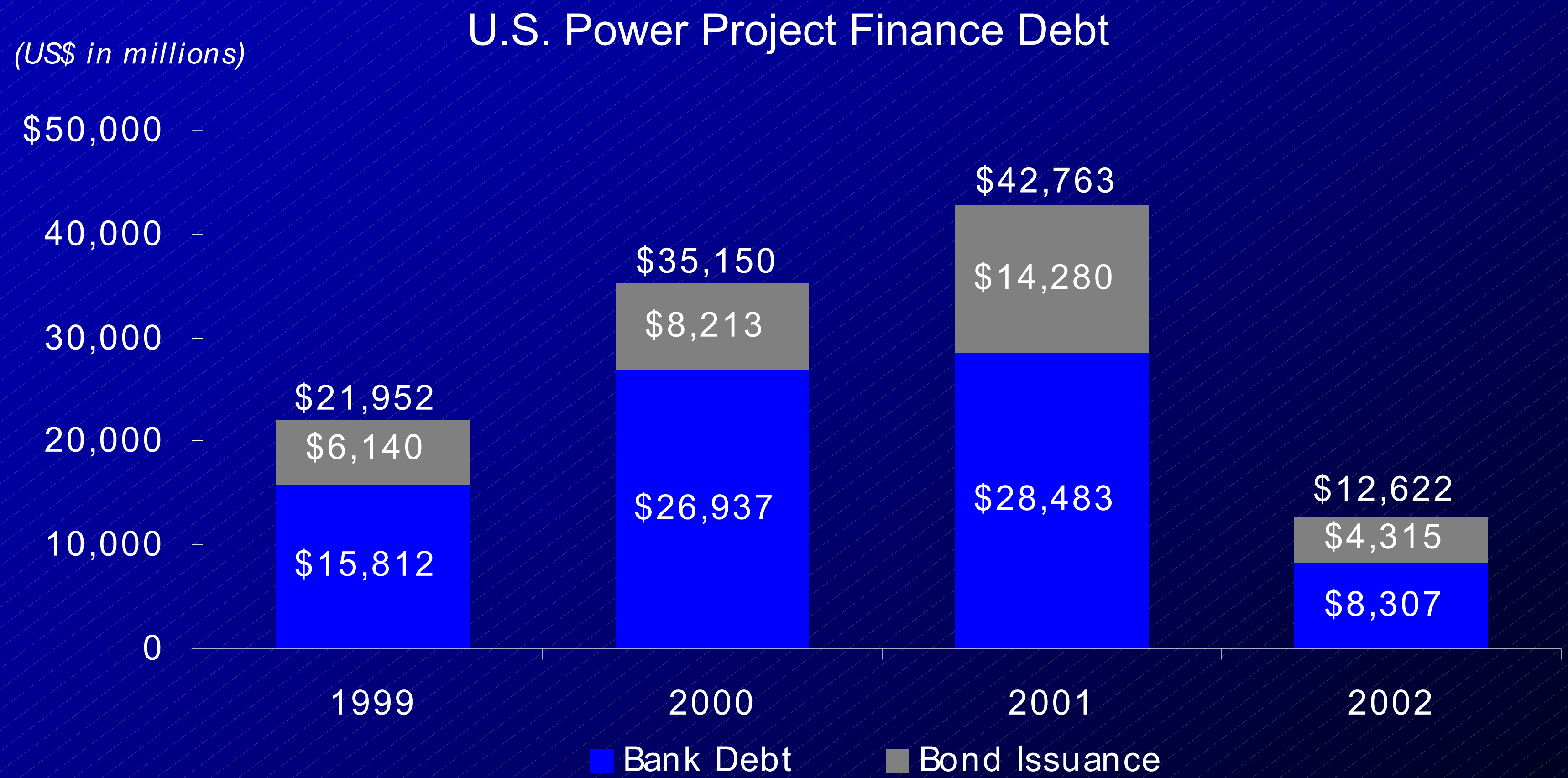
**Project Finance Debt Volume**



# U.S. Power Market

# U.S. Power Market: Taking Inventory

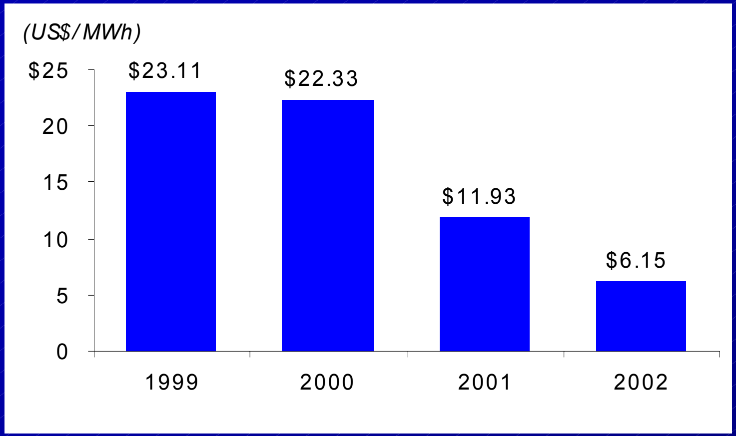
Debt issuance (bank and fixed income) in 2002 declined 70% to $12.6 billion



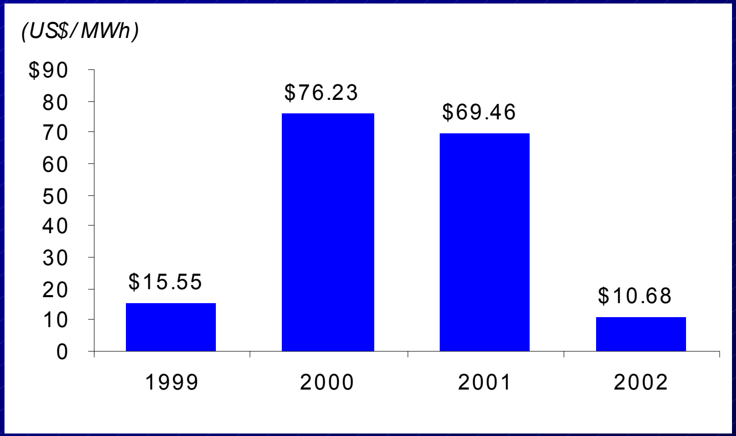

Source: Compiled by SG from various sources.

# The Merchant Power Market: Collapse of Prices

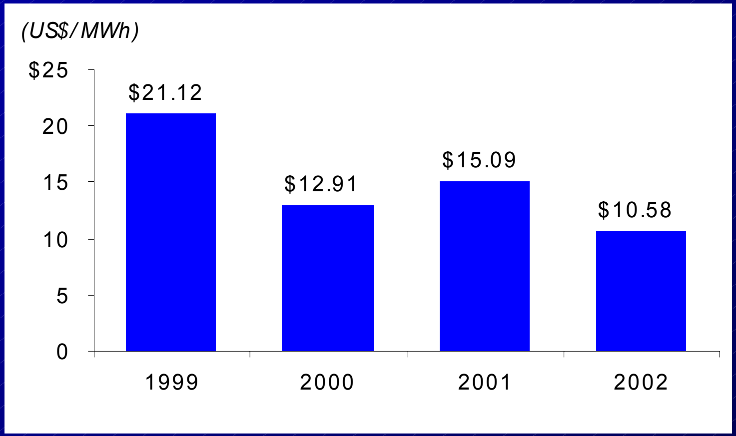
ERCOT On-Peak Spark Spreads



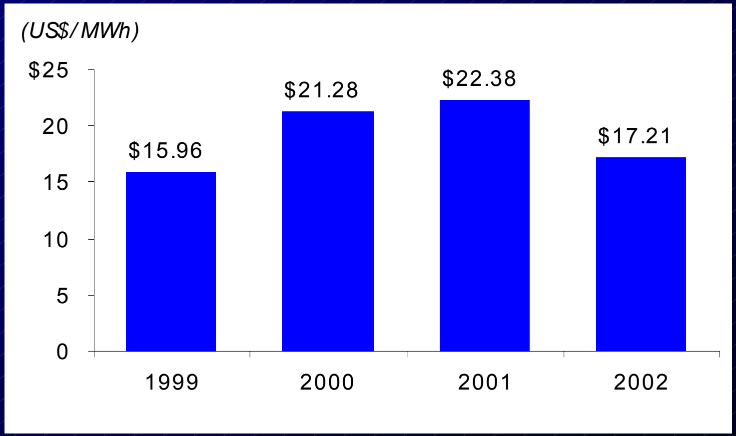

Palo Verde On-Peak Spark Spreads




PJM West On-Peak Spark Spreads




NEPOOL On-Peak Spark Spreads




Source: CERA.
Note: Spark spread based on plant with 7,000 Btu/kWh heat rate. All negative spreads assumed to be zero.

# The Merchant Power Market

- Destruction of confidence in the power sector, caused by the confluence of many seemingly unrelated events, such as:
  - Power crisis in California and bankruptcy of Pacific Gas and Electric Utility in 2001
  - Fraud and bankruptcy of Enron in late 2001
  - Collapsing power prices arising from excess capacity
  - Gas price rise -spark spreads collapse
  - Freezing of deregulation in midstream, resulting in uneven playing field between regulated and unregulated entities
  - Liquidity squeeze on trading businesses
  - Elimination of long-term contracting capability among most power marketers and traders
- Credibility of deregulation questioned; power sector business models undermined

# Unprecedented Magnitude of Financial Pain for Power Industry in US

- Collapse of power prices and asset values along with collapse of many of the major players in unregulated power business led to the cascading collapse of many additional players and projects
- Result is loss of several hundred billion dollars for equity and debt investors
- More money lost by investors than the total cost of all the merchant power facilities built in the US

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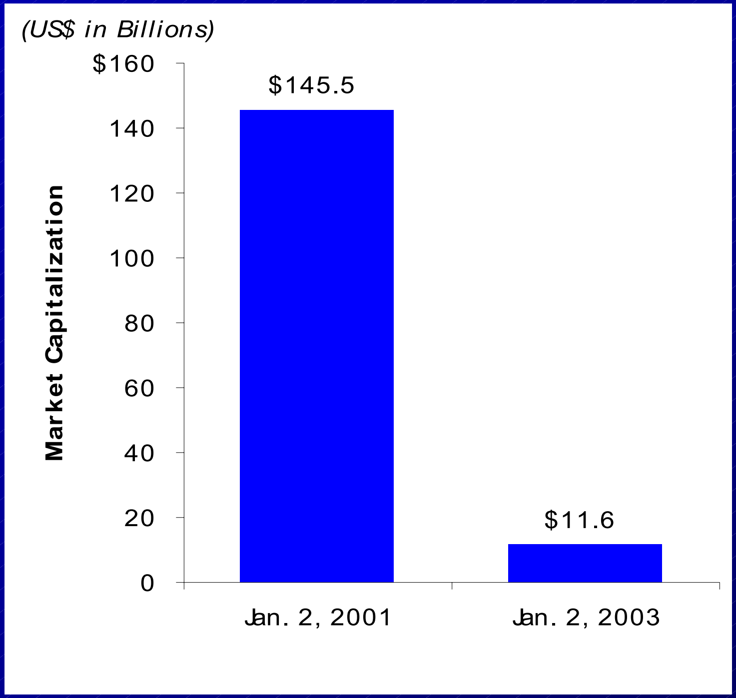
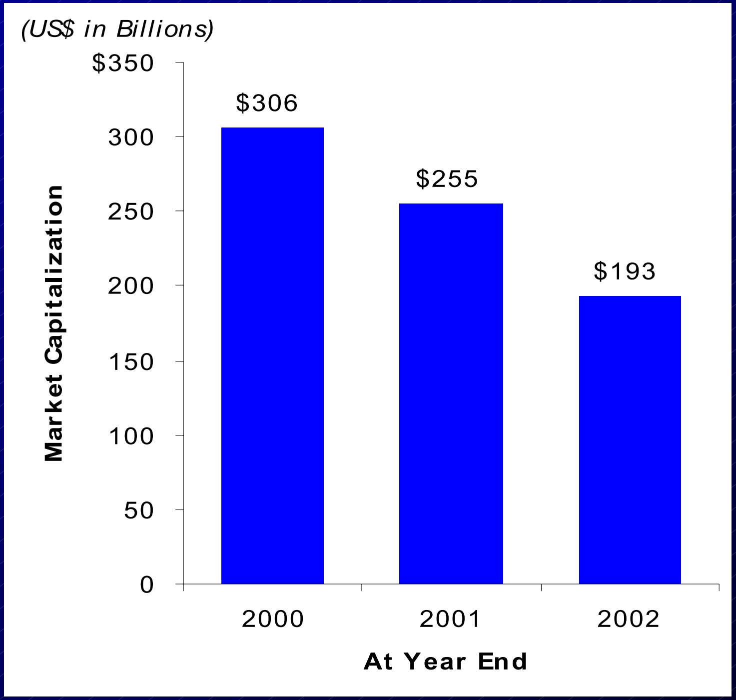
# Over $130 Billion Lost in Equity Value of Eight Companies Alone, Excluding Enron

**Decline of Market Capitalization of Eight Companies with Significant Merchant Trading Business**



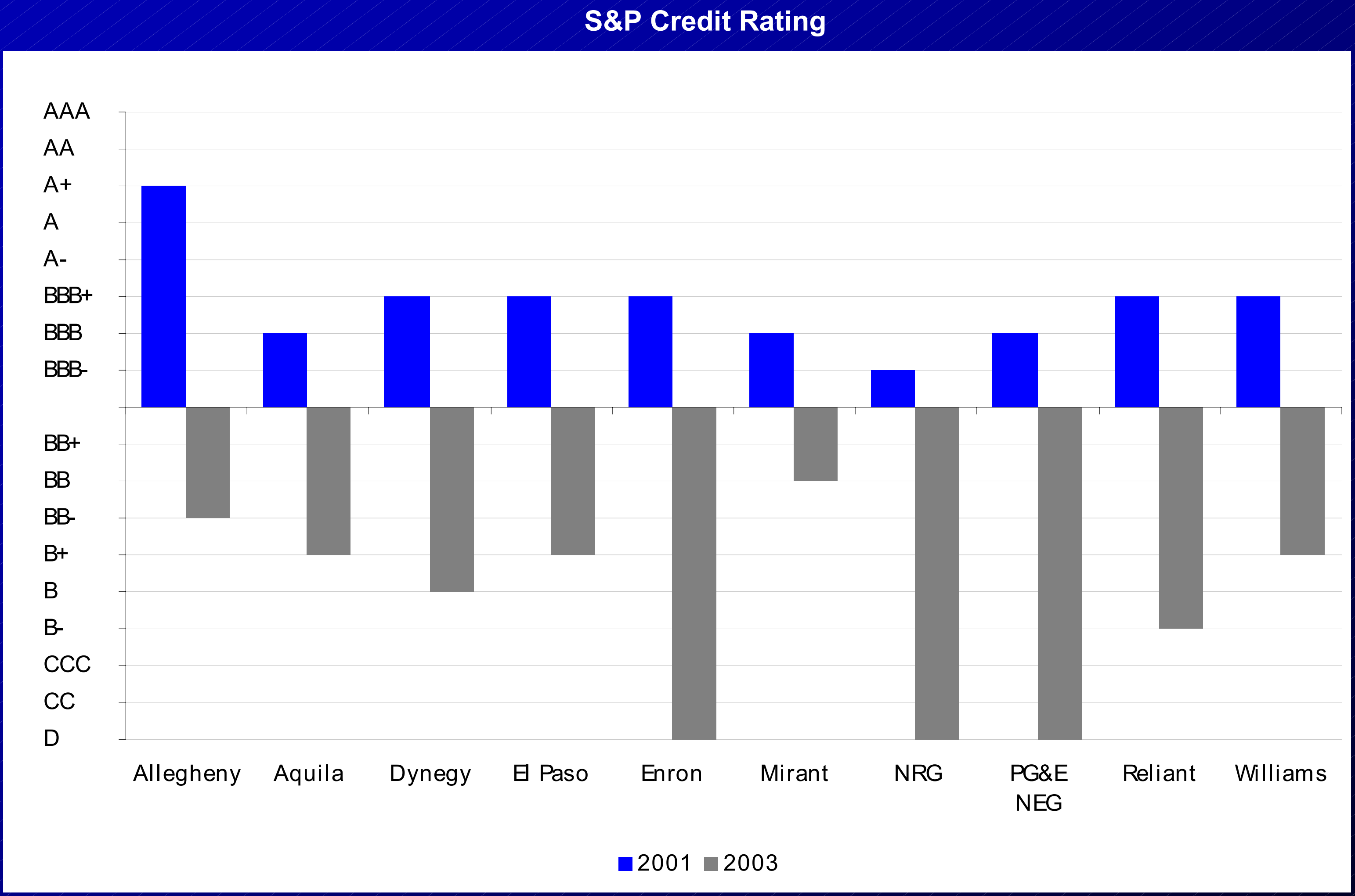

**Decline of Market Capitalization (25 Largest Utilities)**




Note: Companies include AES, Williams, El Paso, Calpine, Dynegy, Mirant, Aquila & Reliant. If Enron were included in this graphic, the total market capitalization would have been $205.6 billion on January 2, 2001

Source: Factset.

# A Busy Time for the Rating Agencies



# Collapse of Secondary Price Levels

- **Secondary market pricing on select company bank debt and bonds has collapsed for many of the merchant energy players**

| Issuer | Issue | AMT ($MM) | Offer Date | Price as of March 10, 2003 |
|---|---|---|---|---|
| AES Corp. | 8.875% due 02/15/2011 | $ 600 | 02/06/2001 | **66.50** |
| Mirant Americas | 8.300% due 05/10/2011 | 850 | 04/26/2001 | **40.50** |
| Calpine Corp. | 8.500% due 02/15/2011 | 2,000 | 10/11/2001 | **47.00** |
| El Paso Corp. | 7.875% due 06/15/2012 | 600 | 06/04/2002 | **72.50** |
| Williams Companies | 8.125% due 03/15/2012 | 650 | 03/14/2002 | **86.00** |
| Dynegy Holdings | 8.750% due 02/15/2012 | 500 | 02/15/2002 | **65.00** |

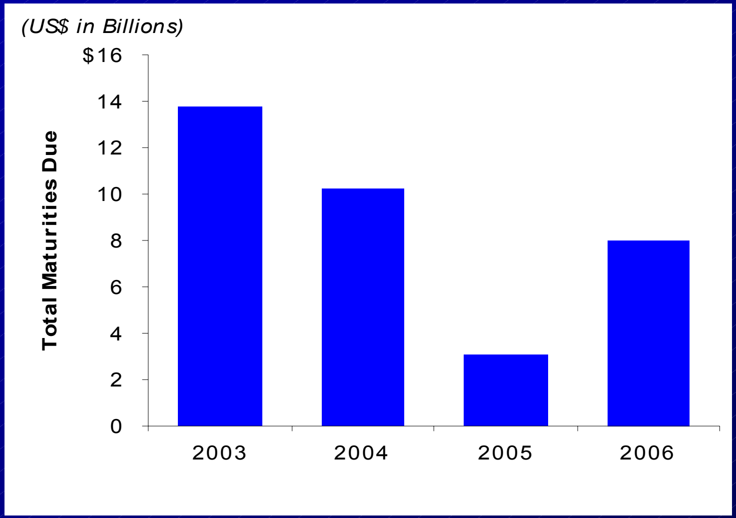
| Loan Issuer | Market[a] |
|---|---|
| Calpine CCFC I | **72–76** |
| Calpine CCFC II | **68–72** |
| Mirant Corp. RC | **61–64** |
| Mission Energy Holdings | **27–29** |
| NEG Gen Holdings | **49–52** |
| NRG Energy | **30–32** |

(a) As of March 3, 2003.

# The Debt Crunch and the Restructurings

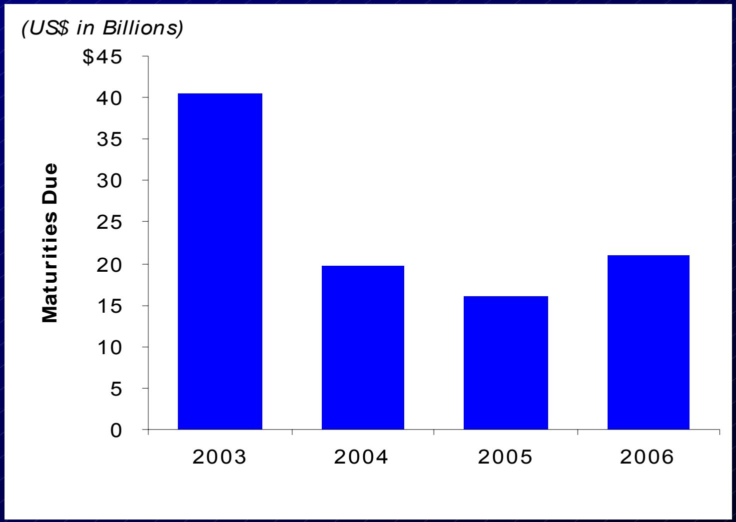
- S&P estimates that approximately $90 billion of industry debt is scheduled to come due by end of 2006
- Mini-perm refinancings will become restructurings.  Investors seek security and yield

**Over $35 Billion Debt Due for Top Nine Merchant Companies (Through 2006 Only)**




Source:  CERA.

**Over $90 Billion Industry Debt Due (Through 2006 Only)**




Source:  Standard & Poors.

# How Will Banks/Lenders Respond?

- Banks reluctant to lend to power industry generally, including regulated utilities. This will change when confidence in regulatory system restored.
- To the extent banks are prepared to lend, increased stringency….
- Bank debt renegotiation ….
- Large loan loss provisions taken in 2002, more to come for banks that did not fully recognize the pain in 2002
- Lenders are continuing to fund completion of construction (where sensible to do so) and take ownership of assets
- Business model reoriented around regulated utilities. Almost $1 billion per week in investment-grade bond funds this year vs $300 million last year

# Asset Sales and Restructurings Dominate the Headlines

- Low asset prices create opportunities
- Industry players are logical buyers but few, if any, will buy in the near future….
- Who are the potential buyers of distressed merchant power assets?
- If assets sold at true fire sale prices, more industry players will buy, but fire sale prices (“cents on the dollar”) unlikely to be acceptable to lenders

# Power Markets — Where from Here?

- New plant will be needed at some point in future, when oversupply is absorbed by load growth increases and shortages are projected
- It is reasonable to expect that load serving entities will enter into power contracts at “new entrant prices” to hedge their needs for power beginning in periods when surplus capacity will no longer exist
- This suggests profitable investment opportunity in buying existing generation at relatively low prices (funded in part by existing bank debt). It also suggests why banks are not likely to sell at “fire sale” prices.

# Replacing the Merchant Model for Power

- The merchant model for power generation was destroyed in 2002
- Neither equity investors nor lenders will finance capacity needed in the future on a merchant power basis
- What may replace the merchant model for power generation? Regulated, load-serving utilities as center of all transactions

# U.K. Power Industry

# Overview of UK Power Industry

- U.K. wholesale power prices have dropped 30% since 1999 (much larger drops in margins available for capital)
- Near total U.S. withdrawal from the market
- U.S. players replaced by Europeans (EdF, RWE, E.ON)
- Insolvency of TXU Europe and near-collapse of British Energy
- Losers — stand alone generators
- Winners/survivors

# UK Power Markets

- Unhedged generation players hurt badly
- Failure of TXU Europe results in several involuntary merchant projects as PPAs/CfDs fall away
- Some mothballing/disconnections/withdrawal of generation capacity
- As in the case of the US, new plant will be needed in future, when oversupply is absorbed by load growth increases and shortages are projected.

# Emerging Markets

# Emerging Markets — A Big Challenge

- Private sector investment in infrastructure (power, water, transportation) in emerging markets dealt a severe blow
- Better model is needed to assure capital flow from private sector to emerging markets
- Commonality in “problem cases”
  - Severe foreign exchange crises
  - Economic problems
  - National political instability

# Net Private Capital Flows to Emerging Markets Continues to Decline

- Net private capital flows to emerging market economies continued to retreat in 2002: $112.5 billion, the lowest level in a decade
- Net direct equity investment in 2002: $107 billion of the $112.5 billion total flows. This is significantly lower than totals seen since 1996
- Nonbank flows of capital (mostly bonds) severely depressed last two years: $12 billion in 2002, compared to annual average volume of $44 billion over last decade
- New lending to emerging markets as a whole was close to zero from 1998 through 2002 and negative in 2001-2 (more repayments than advances)
- Net official flows expected to total $10 billion in 2003

# Multilaterals and ECA Support

- Multilateral and ECA support once again critical to getting financings closed
- Activity up significantly in 2002; several agencies looking for infrastructure opportunities in less developed markets; several in expansion mode
- Need for liquidity enhancements
- Need to tap into the growing liquidity of local banks for the benefit of local projects (e.g., Chinese banks lending in very large amounts to Chinese mega-projects and Middle Eastern banks to Middle Eastern projects)

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# Conclusions and
# The Way Forward

# Is Power Project Financing Still a Viable Business?

- Projects have proven resilient over time
- There is still interest in stable, lower risk investment opportunities. Regulatory environment holds the key
- S&P Risk Solutions has shown that recovery rates on project finance loans are higher than for corporate loans of similar rating.
- Problems that existed in PF in 2002 were not exclusively due to the projects themselves. Sponsor-related problems added significant fuel to the fire.

# Where Do We Go From Here?

- It is too late to panic.  Patience and calm are required to avoid unnecessary losses
- New model needed to attract funds flow to emerging markets,
- Grow from what we learned in 2002
- Bright spots

# How the Power Industry Can Rebuild

- Foundation of integrity, transparency in financings and in financial statements, strong corporate governance
- Management teams focused on narrower, core business, willing to take difficult steps to raise capital and to cut costs and exposure
- Investment community recognizes that sustainable growth means low growth for most players

# Investment in power generation: A banker's perspective

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*Paris, March 25, 2003*