

Considerations in Setting a Regional CO2 Cap

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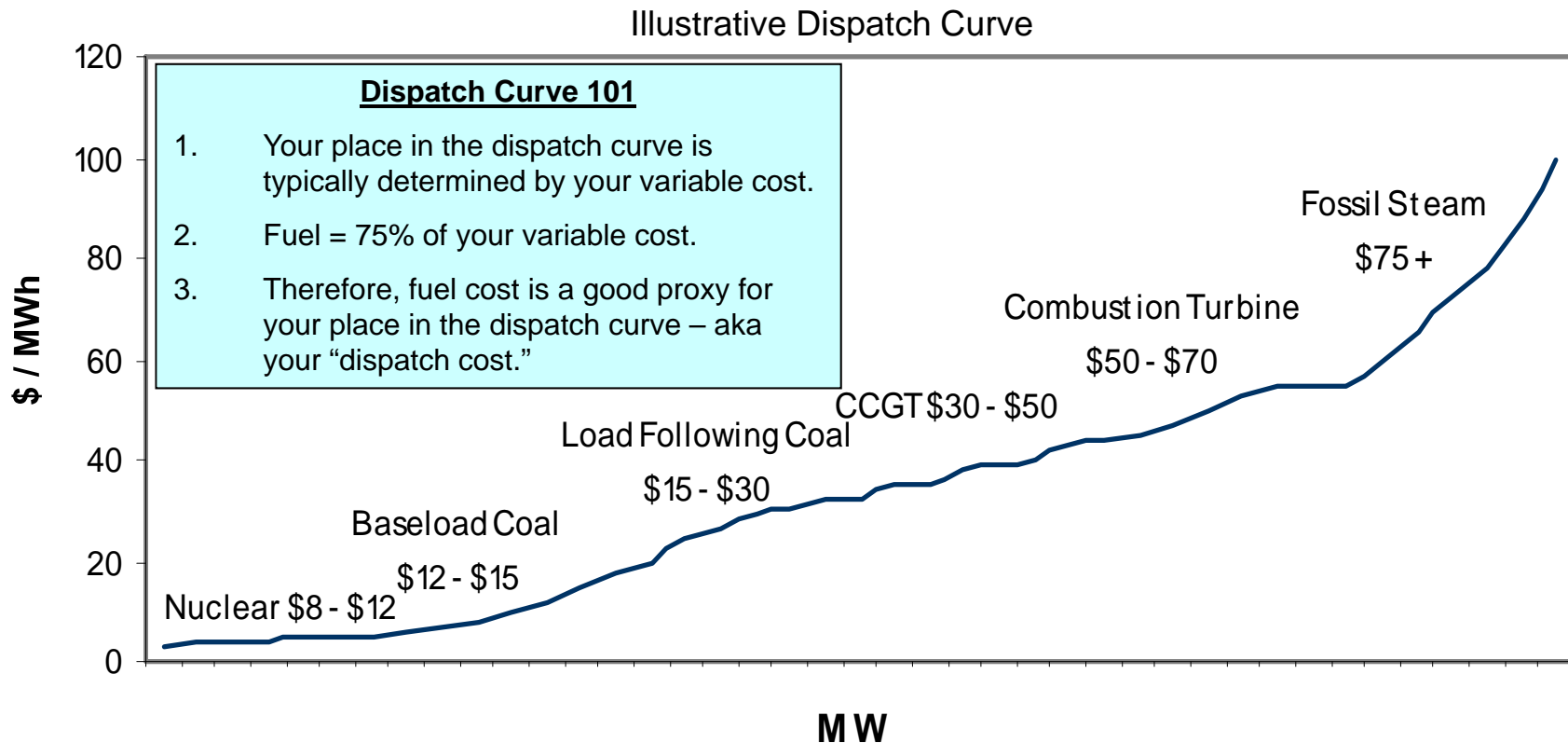


Considerations in Setting a Regional CO2 Cap

- Effect on Fuel Diversity: The Northeastern Coal Question
 - The Effect of Environmental Adders and Natural Gas Price on The Competitiveness of Coal
 - An Unequal Playing Field: The Effect of An Expanded PJM on the Competitiveness of Coal
 - Why Functioning Capacity Markets Matter
- Allowance Allocation: Equity Matters
- Timing: The Case for Sufficient Lead Time

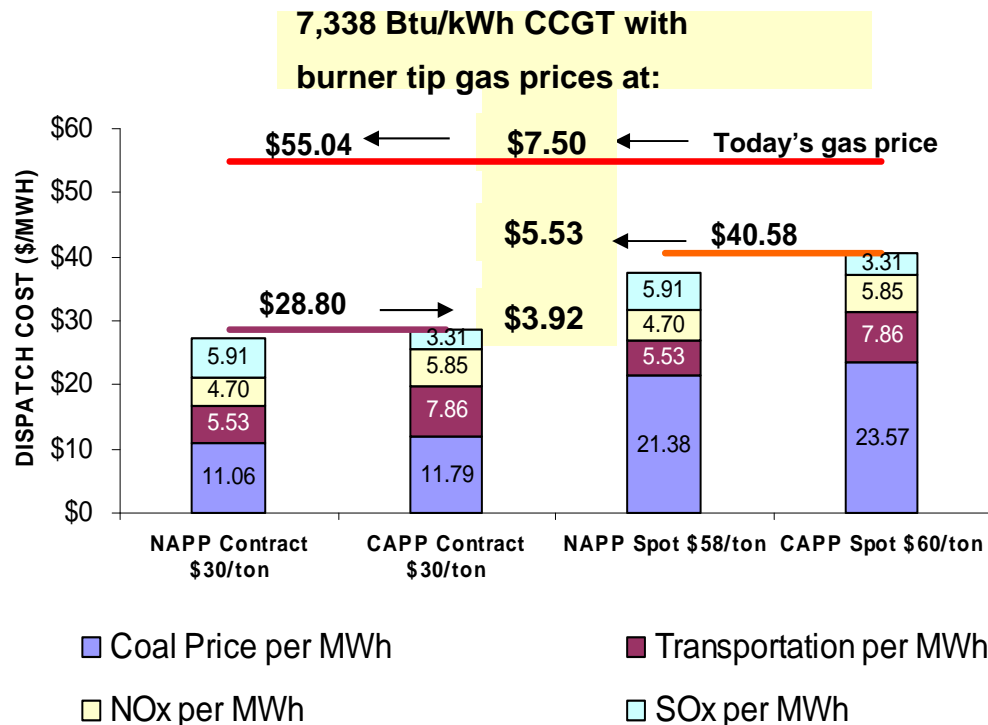
The Dispatch Curve

Variable Cost = Clearing Price = Energy Revenue



In PJM, the last unit running sets the market clearing price for all other units running at that time. Load-following coal or combined-cycle natural gas units typically set the market clearing price, with gas setting the market clearing price approximately 50% of the time, with coal setting the market clearing price the remainder of the time.

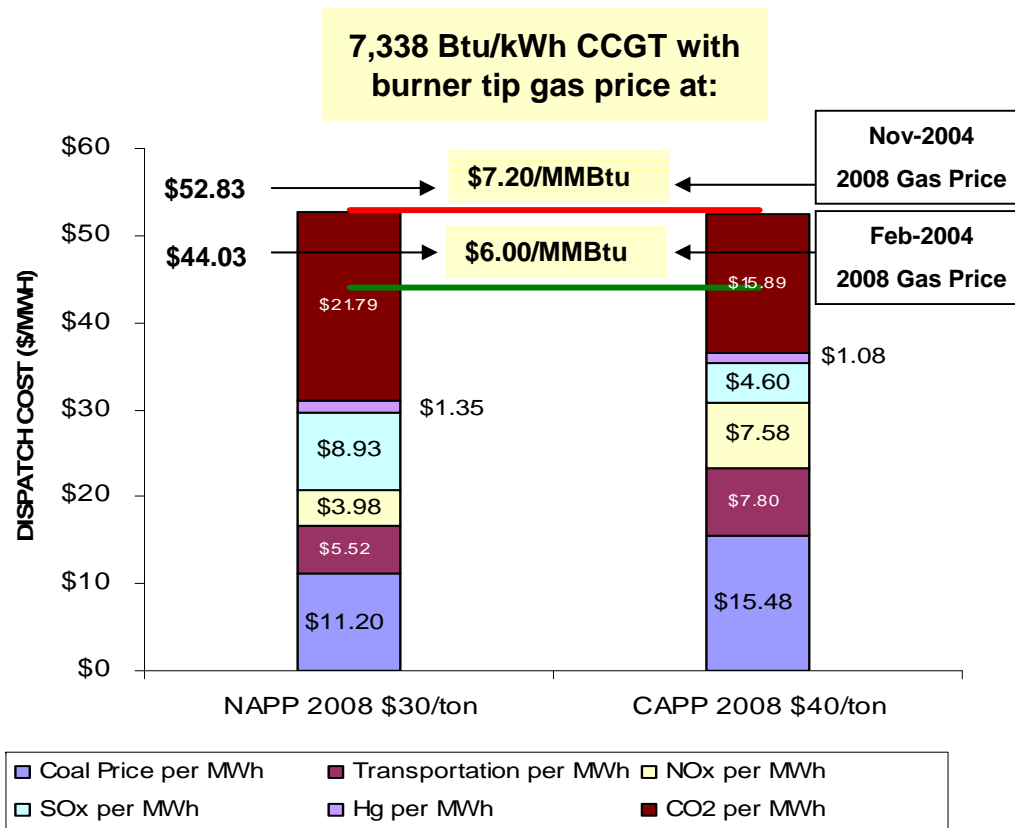
Load-Following Coal v. CC Natural Gas in PJM Today



2004 ASSUMPTIONS	NAPP	CAPP
COAL SPECS (Btu/lb,%S)	13,869,2.1%S	12,942, 0.9%S
HEAT RATE (Btu/kWh)	10,200	10,100
COAL Transportation	\$15/TON	\$20/TON
SCR OR Scrubber?	NO	NO
SO2 Emissions (lb/MMBtu)	2.50	1.30
SO2 COSTS (\$/Ton)	\$500	\$500
NOx Emissions (lb/MMBtu)	0.26	0.5
NOx COSTS (\$/Ton)	\$2,300	\$2,300

Load-following coal beats combined-cycle natural gas units absent a significant and sustained drop in natural gas price, even in spite of a recent spike in coal prices and emission allowance costs.

Load-Following Coal v. New Natural Gas in PJM Tomorrow



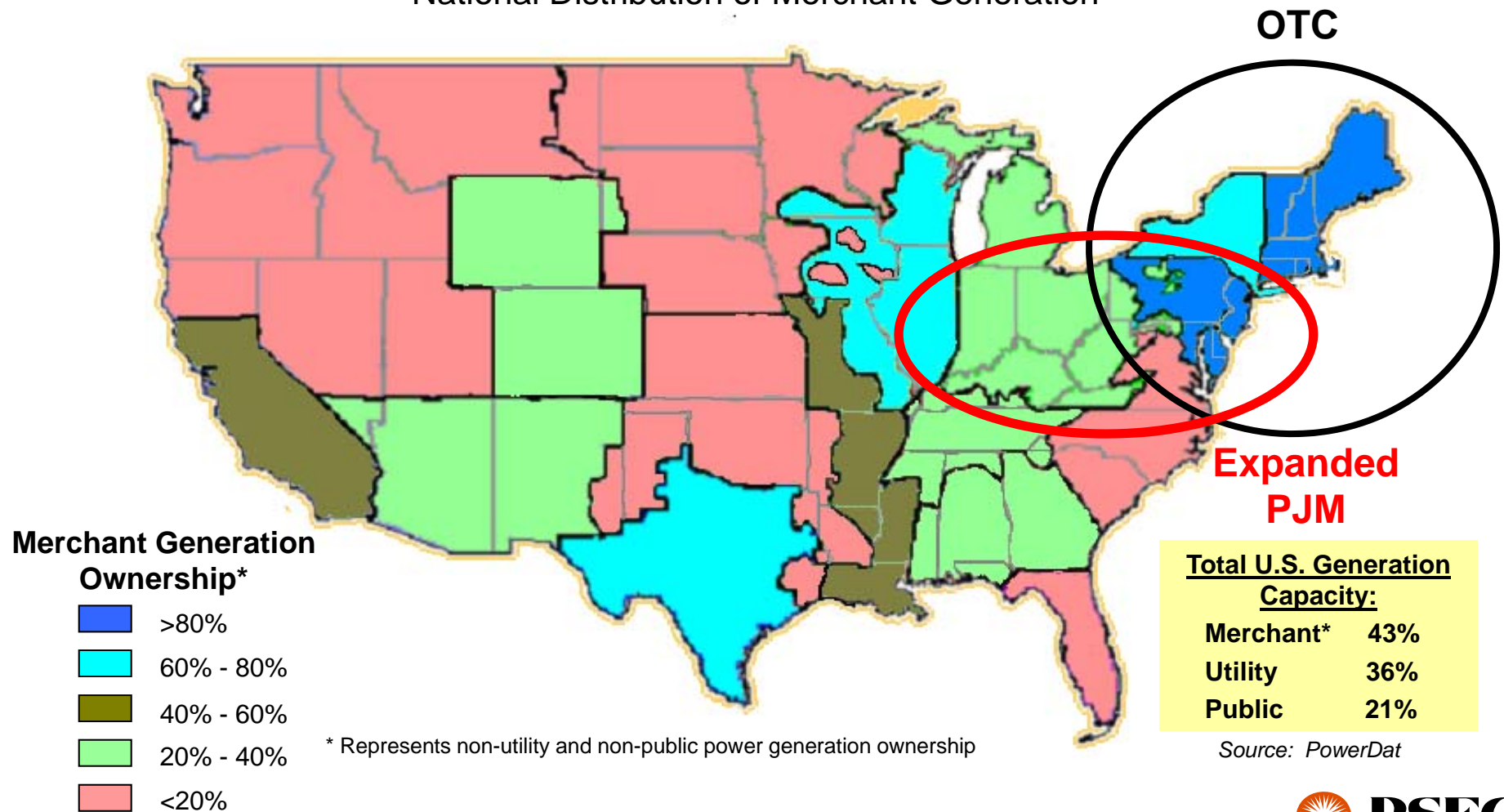
2008 ASSUMPTIONS	NAPP	CAPP
COAL SPECS (Btu/lb,%S)	13,869,2.1%S	12,942, 0.9%S
HEAT RATE (Btu/kWh)	10,200	10,100
COAL Transportation	\$15/TON	\$20./TON
SCR OR Scrubber?	NO	NO
SO2 Emissions (lb/MMBtu)	2.50	1.30
SO2 COSTS (\$/Ton)	\$700	\$700
NOx Emissions (lb/MMBtu)	0.26	0.5
NOx COSTS (\$/Ton)	\$3,000	\$3,000
Hg Emissions (lb/Tbtu)	7.54	6.13
Hg COSTS (\$/LB)	\$35,000	\$35,000
CO2 Emissions (lb/MMBtu)	205.1	205.2
CO2 COSTS (\$/Ton)	\$14-\$23	\$9-\$16

Rising environmental compliance costs continue to push load-following coal to the margin, with the future price of natural gas and cost of CO2 compliance emerging as the two wildcards in the viability of load-following coal capacity in the RGGI region.

The Unlevel Playing Field

Merchant v. Regulated/Re-Regulated Generation

National Distribution of Merchant Generation



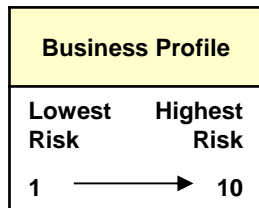
S&P Ratings Criteria

Debt, Cash Flow, and Perceived Business Risk

Distribution Companies

Company	Rating/Outlook	Business Profile
NSTAR	A/Stable	1
Con Edison	A/Stable	2
PPL Electric	A-/Negative	4
Energy East	BBB+/Negative	3
PEPCO	BBB+/Negative	3
CL&P	BBB+/Negative	3
PSE&G	BBB/Negative	3
Duquesne	BBB/Negative	4
JCP&L	BBB-/Stable	4

S&P Rating	bps Spread from BBB
AAA	420
AA	350
A	280
BBB	0
BB	-490
B	-1910
CCC	-4500



S&P Report 11/23/2004

"Diversified"

Company	Rating/Outlook	Business Profile
Keyspan	A/Negative	4
Exelon	A-/Negative	7
Cinergy	BBB+/Stable	5
Constellation	BBB+/Stable	7
Northeast Util.	BBB+/Negative	5
Pepco	BBB+/Negative	5
Conectiv	BBB+/Negative	5
Dominion	BBB+/Negative	7
AEP	BBB/Stable	6
Entergy	BBB/Stable	6
Duke	BBB/Stable	7
PPL	BBB/Stable	7
PSEG	BBB/Negative	7
First Energy	BBB-/Stable	6
Edison Int'n	BB+/Stable	6
Allegheny	B+/Positive	7

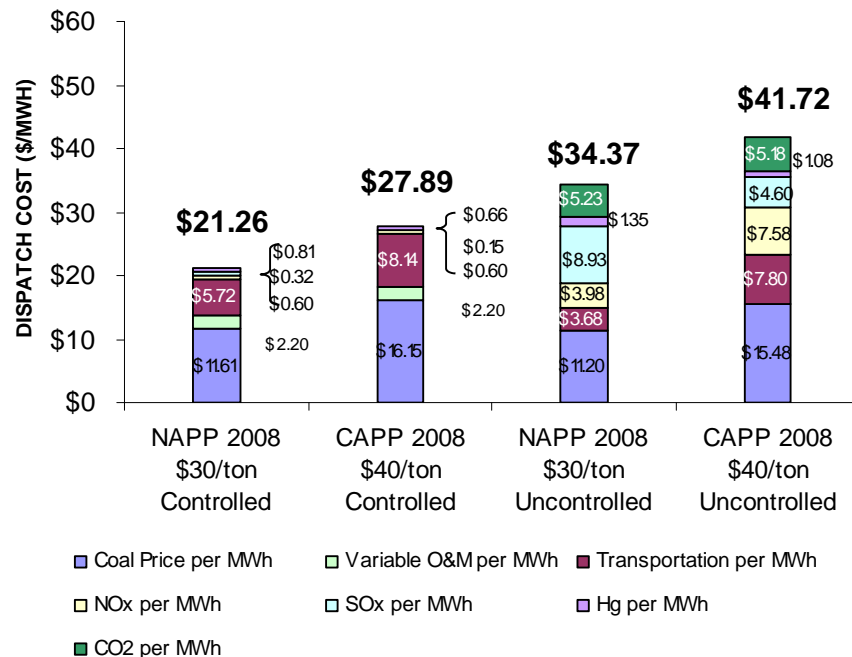
Merchant Generation

Company	Rating/Outlook	Business Profile
Keyspan Gen	A/Negative	5
FPL	A/Negative	8
Exelon Gen	A-/Negative	8
PPL Energy	BBB/Stable	8
PSEG Power	BBB/Negative	8
Duke Energy Trading	BBB-/Stable	10
AES	B+/Positive	9
NRG	B+/Stable	9
Reliant Mid-Atl.	B/Stable	8
Dynegy	B/Negative	8
Calpine	B/Negative	9
Edison Mission	B/Negative	9
El Paso Corp.	B-/Negative	8
NEGT	D	10
Mirant	NR/--	10

A trend is emerging where the bond market views competitive markets as inherently risky, rewarding rate-based generation with favorable cost of capital.



Coal in RGGI v. Coal Outside RGGI The Crux of The Leakage Concern



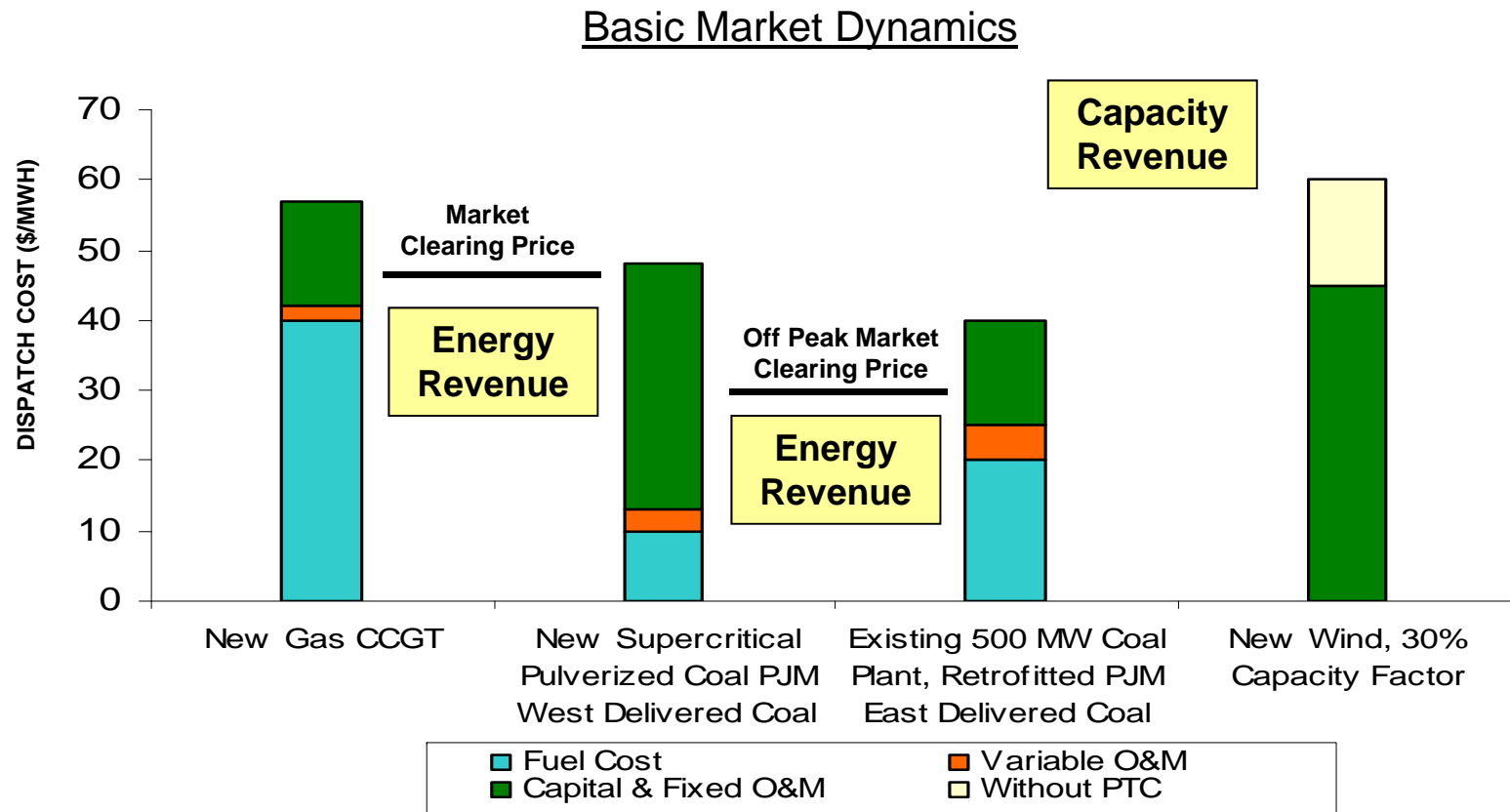
\$250M capital investment for a 500MW plant

2008 ASSUMPTIONS	NAPP	CAPP
COAL SPECS (Btu/lb,%S)	13,900,2.1%S	12,900, 0.9%S
HEAT RATE (Btu/kWh)	10,600	10,500
COAL Transportation	\$15/TON	\$20/TON
SCR OR Scrubber?	YES	YES
SO2 Emissions (lb/MMBtu)	0.15	0.07
SO2 COSTS (\$/Ton)	\$400	\$400
NOx Emissions (lb/MMBtu)	0.06	0.06
NOx COSTS (\$/Ton)	\$1,900	\$1,900
Hg Emissions (lb/TBtu)	2.26	1.84
Hg COSTS (\$/LB)	\$35,000	\$35,000
CO2 Emissions (lb/MMBtu)	205.1	205.2
CO2 COSTS (\$/Ton)	\$5	\$5

As a consequence of easier access to capital and lack of a CO2 constraint, load-following coal units outside RGGI are set to enjoy, at a minimum, a \$13 dispatch cost advantage over similar units in RGGI. Transmission capacity becomes the only limit on this advantage.

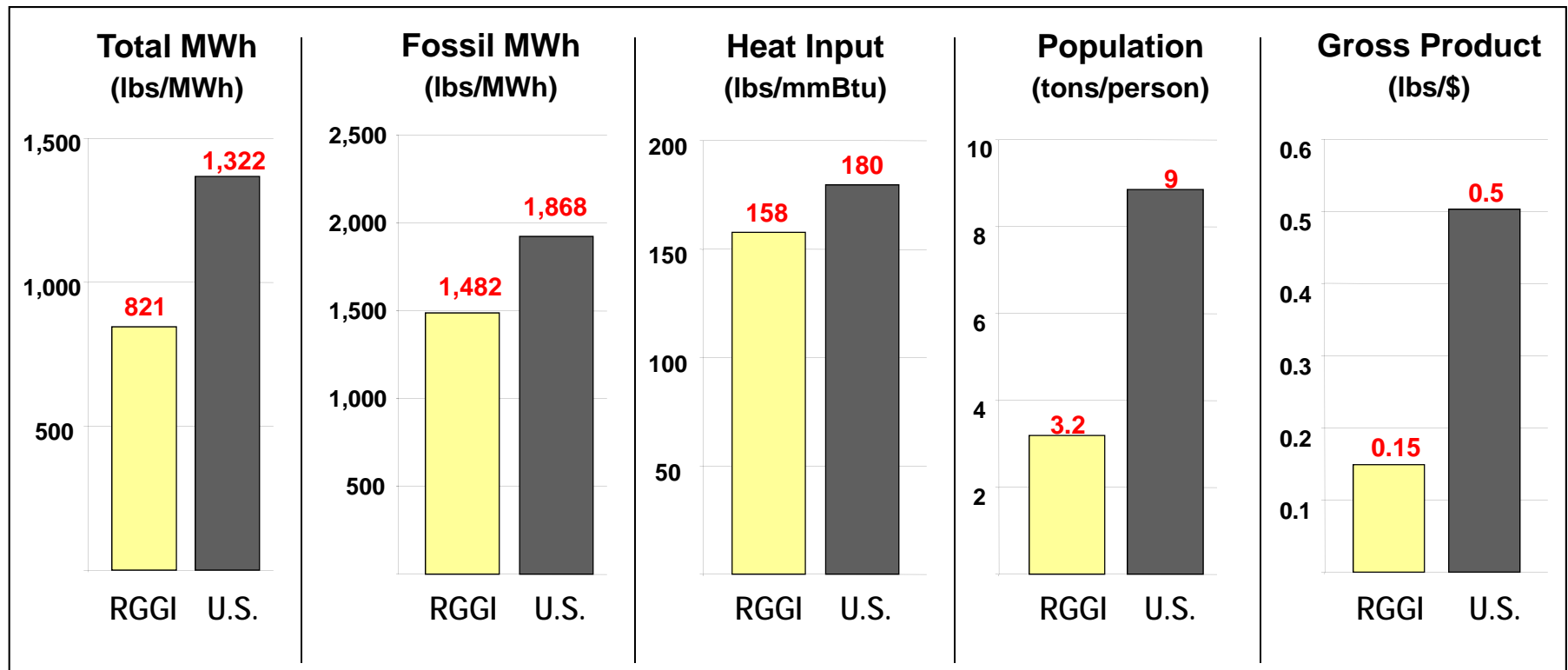
Production Cost v. Revenue

Earning Enough to Build & Maintain Generation



Under current market conditions, energy revenues alone are rarely enough to recover the full cost of new investment making the degree of capacity payments critical to the viability of new investment.

Emission Allocation as National Precedent Setting Rules That Work for the Region

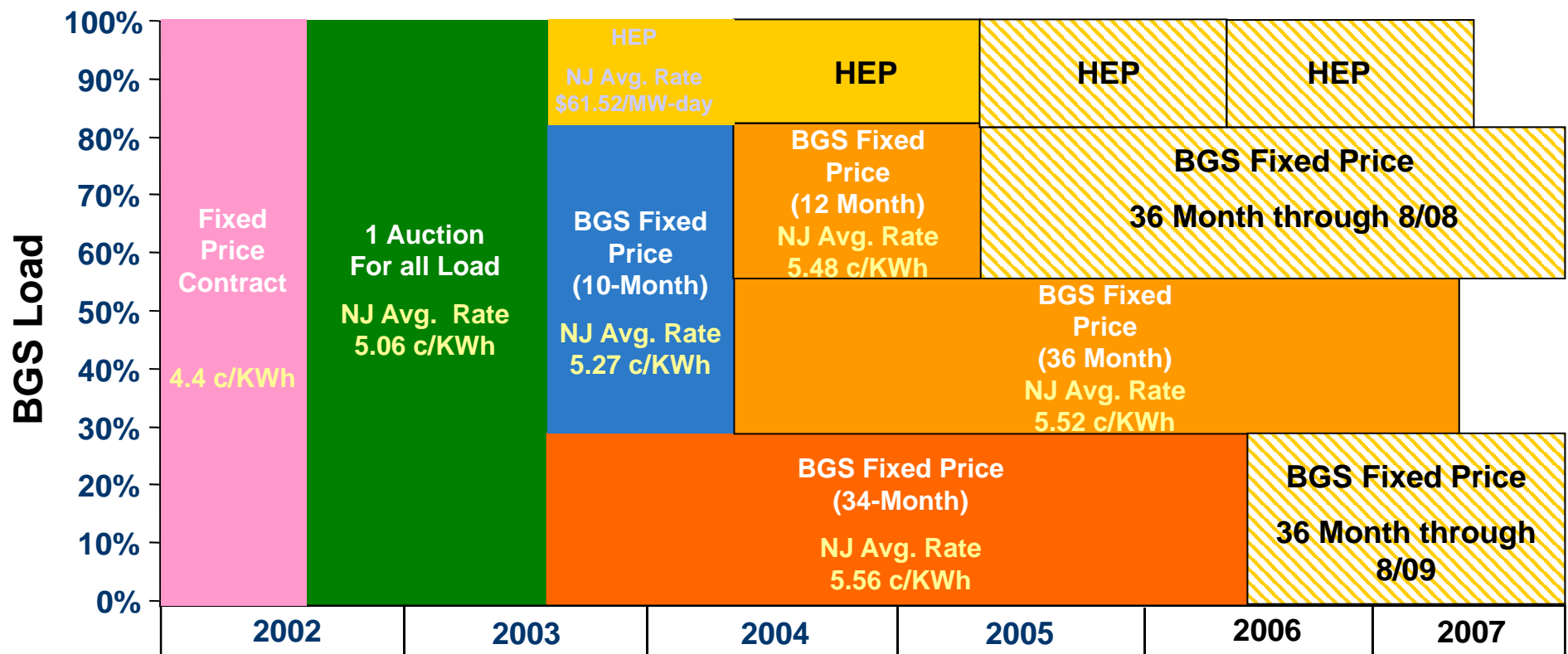


National CO₂ allocations based on an emission performance standard concept favor the RGGI region.

NJ BGS Auction Structure

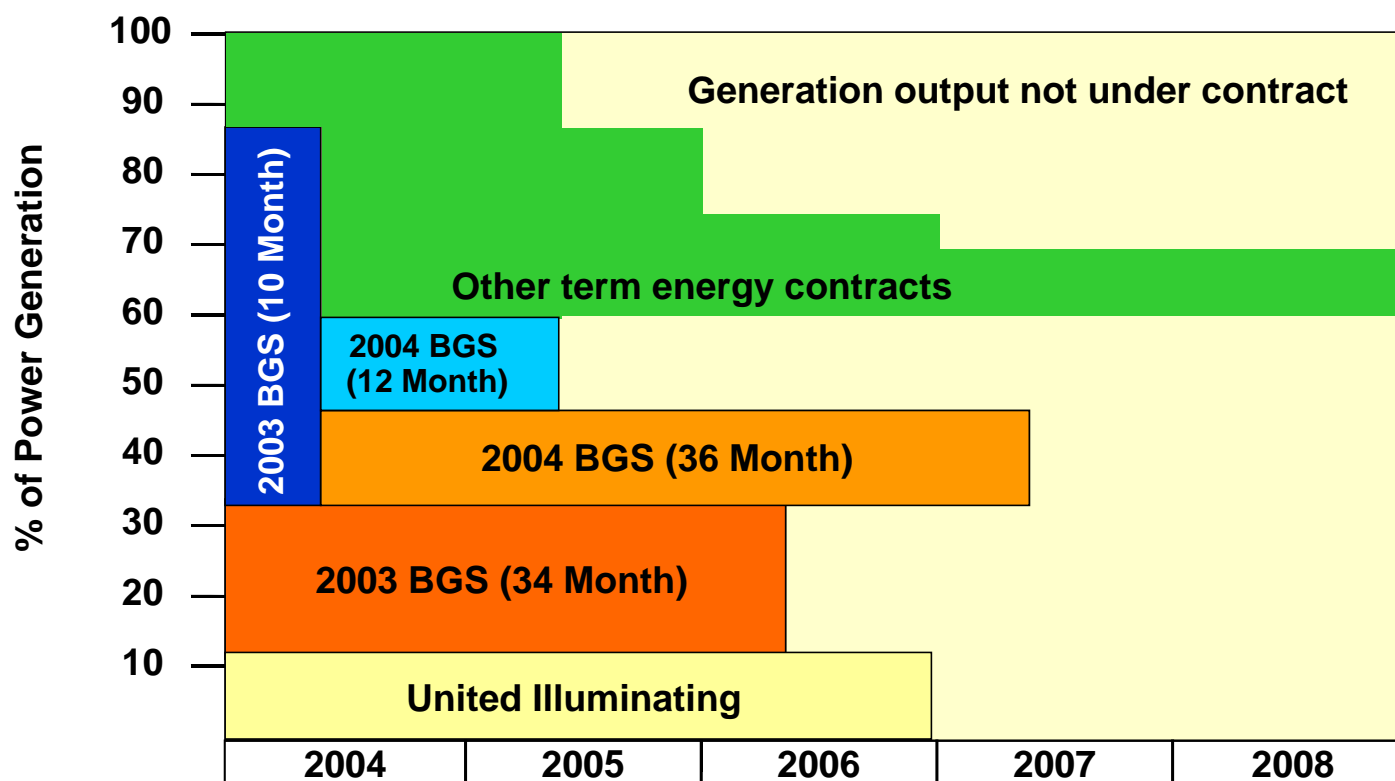
Fixed Price for Consumers = Margin Risk for Generators

The NJ auction accounts for approximately 21% of the total load in RGGI. It is successful in stabilizing prices for consumers, forcing wholesale generators to compete on price.



Case Study: PSEG Power BGS and Long-term Contracts Through 2008

PSEG Power Term Contracts



Key Takeaways

- ✓ The Future Price of Natural Gas Matters. Rising natural gas prices improve energy margins for coal and nuclear, but also raise electricity prices for consumers. Declining natural gas prices eat into margins for nuclear and coal, potentially forcing some coal to retire.
- ✓ The Price of CO2 Matters. Given current coal and natural gas price trends, a carbon cap that drives CO2 prices above \$10 a ton has a high probability of forcing RGGI region coal capacity to close.
- ✓ Market Rules Matter. Return on capital is a function of energy and capacity revenues. Currently, energy margins are inadequate to fully recover the cost of capital in new or modified plant, making capacity payments critical to the viability of investment in environmental retrofits and new generation.
- ✓ A Level Regulatory Playing-Field Matters. Companies with the ability to recover the capital cost of emission control equipment through rates enjoy a competitive advantage over those that do not. Companies required to internalize the cost of CO2 or other environmental adders are penalized in competition with those that do not face such restrictions. This is the looming reality of an expanded PJM.
- ✓ Timing Matters. In an effort to demonstrate positive and certain cash-flows, companies are entering into long-term contracts today, making future CO2 regulation a potential threat to their expected energy margin.