

MOPR Unit Specific Exception Process Education and Background June 7, 2013

Paul M. Sotkiewicz, Ph.D.
Chief Economist
PJM Interconnection, LLC

- The MOPR process approved by FERC
 - Sets a default screen at 100% of Net CONE
 - Allows for Competitive Entry and Self Supply Exemptions to MOPR
 - FERC ordered retention for an exception process that allows a new entrant to show to the IMM and PJM that it has verifiably lower costs and/or higher expected net revenues than the screen based solely from PJM markets
 - Requires full documentation by sellers requesting the exception from the MOPR screen price
 - Process has been carried over from what had already been in place

- Demonstration of lower costs 5.14(h)(5)(iii)
 - “based on competitive cost advantages relative to the costs estimated for subsection (4), including, without limitation, competitive cost advantages resulting from the Capacity Market Seller’s business model, financial condition, tax status, access to capital or other similar conditions affecting the applicant’s costs...”
 - “demonstrate that claimed cost advantages or sources of net revenue that are irregular or anomalous, that do not reflect arm’s-length transactions, or that are not in the ordinary course of the Capacity Market Seller’s business are consistent with the standards of this subsection.”

- Demonstration of lower costs 5.14(h)(8)(iii)
 - A Sell Offer evaluated under the Unit-Specific Exception shall be permitted if the information provided reasonably demonstrates that the Sell Offer's competitive, cost-based, fixed, net cost of new entry is below the MOPR Floor Offer Price, **based on competitive cost advantages relative to the costs implied by the MOPR Floor Offer Price, including, without limitation, competitive cost advantages resulting from the Capacity Market Seller's business model, financial condition, tax status, access to capital or other similar conditions affecting the applicant's costs, or based on net revenues that are reasonably demonstrated hereunder to be higher than those implied by the MOPR Floor Offer Price. Capacity Market Sellers shall be asked to demonstrate that claimed cost advantages or sources of net revenue that are irregular or anomalous, that do not reflect arm's-length transactions, or that are not in the ordinary course of the Capacity Market Seller's business are consistent with the standards of this subsection.** Failure to adequately support such costs or revenues so as to enable the Office of the Interconnection to make the determination required in this section will result in denial of a Unit-Specific Exception hereunder by the Office of the Interconnection.

Showing of Lower Costs for MOPR Exception: New Provision Effective Feb 5, 2013...Same as Previous

- Demonstration of lower costs 5.14(h)(8)(ii)
 - Estimates of costs or revenues shall be supported at a level of detail comparable to the cost and revenue estimates used to support the Net Asset Class Cost of New Entry established under this section 5.14(h). As more fully set forth in the PJM Manuals, supporting documentation for project costs may include, as applicable and available, a complete project description; environmental permits; vendor quotes for plant or equipment; evidence of actual costs of recent comparable projects; bases for electric and gas interconnection costs and any cost contingencies; bases and support for property taxes, insurance, operations and maintenance (“O&M”) contractor costs, and other fixed O&M and administrative or general costs; financing documents for construction–period and permanent financing or evidence of recent debt costs of the seller for comparable investments; and the bases and support for the claimed capitalization ratio, rate of return, cost-recovery period, inflation rate, or other parameters used in financial modeling.

- Demonstration of lower costs 5.14(h)(8)(ii)
 - Such documentation also shall identify and support any sunk costs that the Capacity Market Seller has reflected as a reduction to its Sell Offer. The request shall include a certification, signed by an officer of the Capacity Market Seller, that the claimed costs accurately reflect, in all material respects, the seller's reasonably expected costs of new entry and that the request satisfies all standards for a Unit-Specific Exception hereunder.

- Expected net energy market revenue 5.14(h)(5)(ii)
 - “The request also shall identify all revenue sources relied upon in the Sell Offer to offset the claimed fixed costs...the Capacity Market Seller may rely upon forecasts of competitive electricity prices in the PJM Region based on well defined models that include fully documented estimates of future fuel prices, variable operation and maintenance expenses, energy demand, emissions allowance prices, and expected environmental or energy policies that affect the seller’s forecast of electricity prices in such region, employing input data from sources readily available to the Office of the Interconnection and the Market Monitoring Unit.”

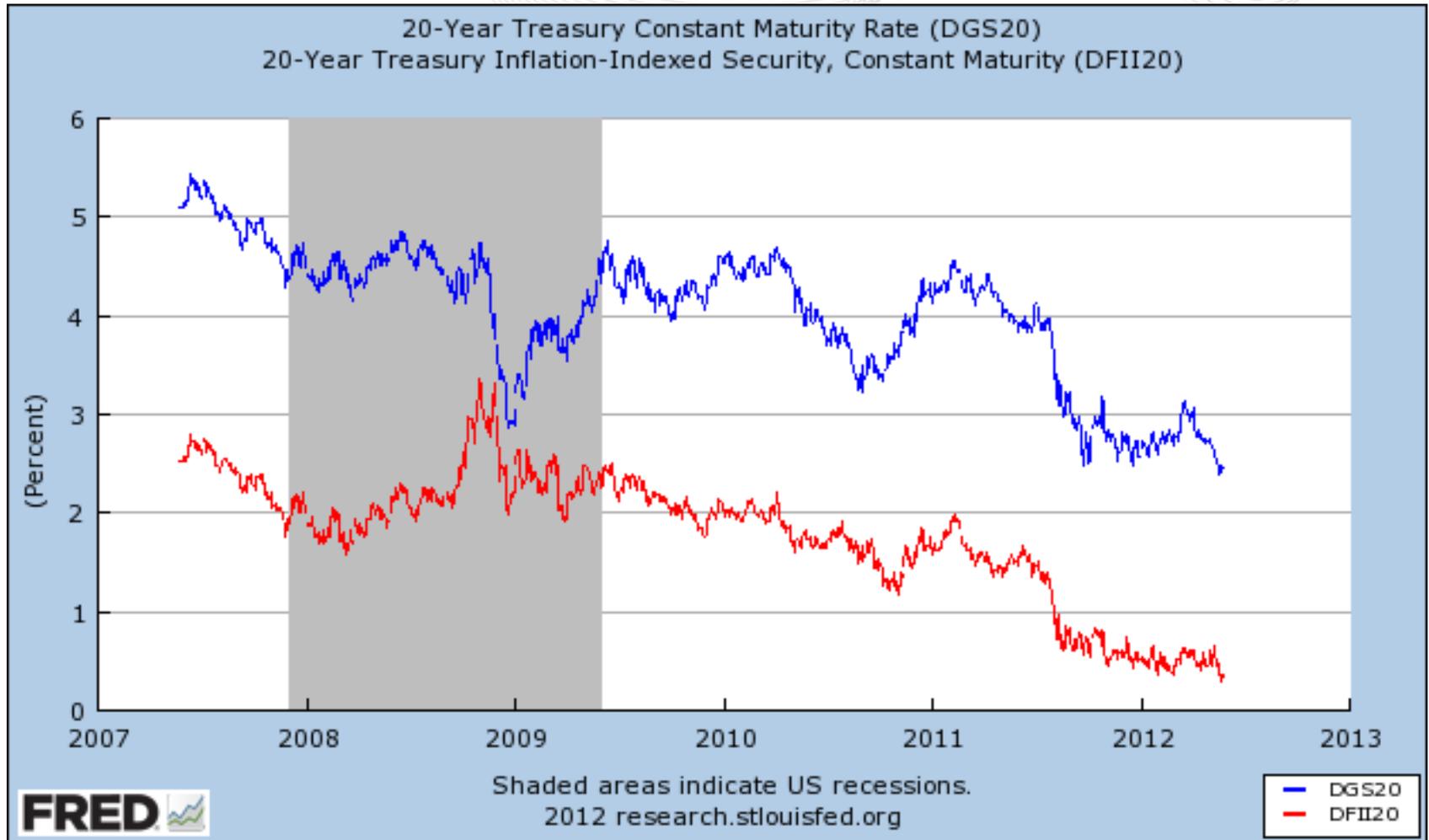
Net Energy Revenues for a MOPR exception: New Provision Effective Feb 5, 2013

- Expected net energy market revenue 5.14(h)(8)(ii)
 - The request also shall identify all revenue sources relied upon in the Sell Offer to offset the claimed fixed costs, including, without limitation, long-term power supply contracts, tolling agreements, or tariffs on file with state regulatory agencies, and shall demonstrate that such offsetting revenues are consistent, over a reasonable time period identified by the Capacity Market Seller, with the standard prescribed above. In making such demonstration, the Capacity Market Seller may rely upon forecasts of competitive electricity prices in the PJM Region based on well defined models that include fully documented estimates of future fuel prices, variable operation and maintenance expenses, energy demand, emissions allowance prices, and expected environmental or energy policies that affect the seller's forecast of electricity prices in such region, employing input data from sources readily available to the public. Documentation for net revenues also may include, as available and applicable, plant performance and capability information, including heat rate, start-up times and costs, forced outage rates, planned outage schedules, maintenance cycle, fuel costs and other variable operations and maintenance expenses, and ancillary service capabilities.

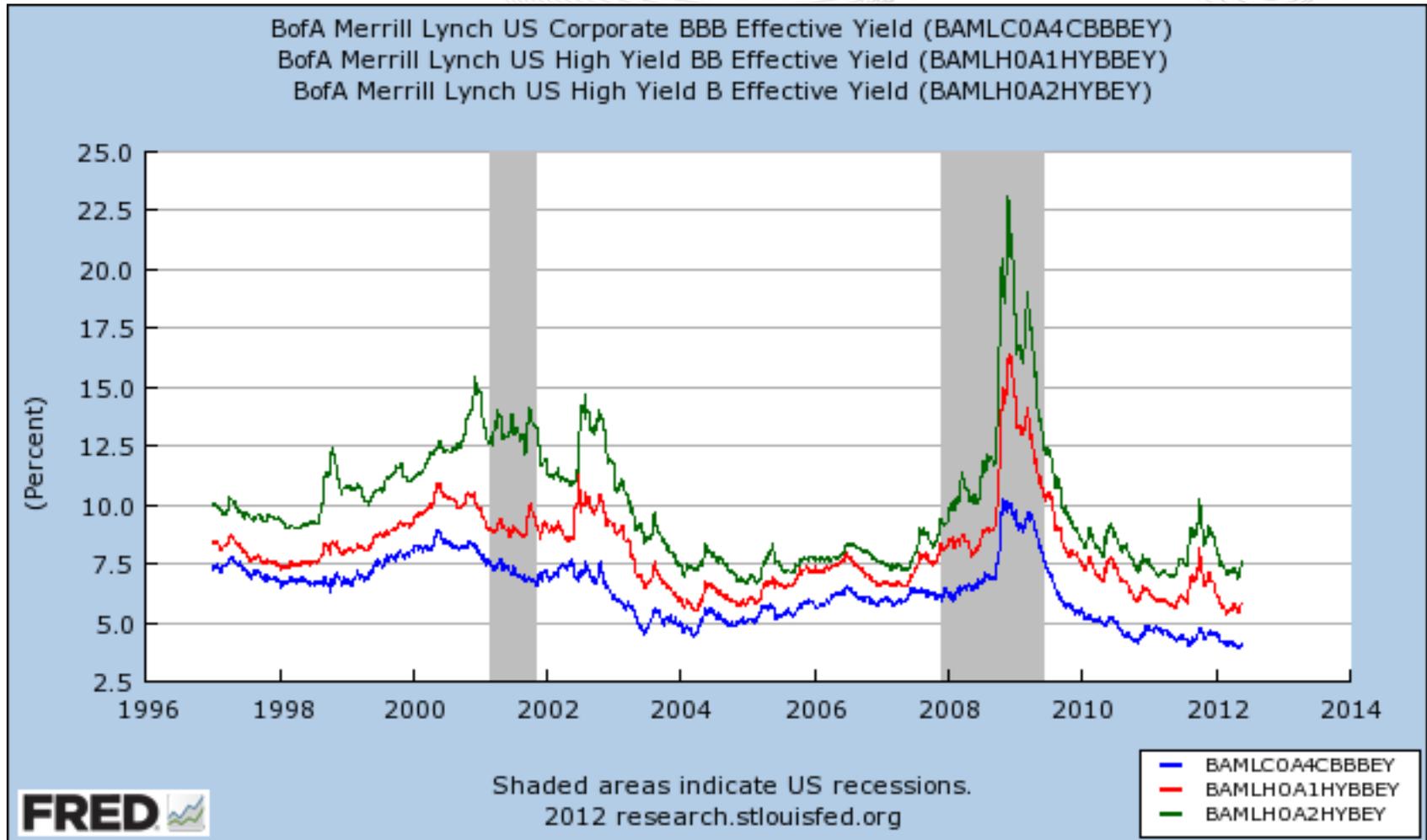
- Evaluating reasonableness through the benchmarking of key cost and revenue parameters that could lead to demonstrably lower net costs
 - Actual total capital costs based upon the Brattle CONE study and estimates from EIA
 - Cost of equity and cost of debt based upon latest publicly available information and using work from Brattle in the CONE study
 - NYMEX/CME forward curves for power and gas to get a sense of revenues in the future delivery year
 - Inflation from the difference between inflation protected and normal treasuries
 - Resale or salvage value in residual and sunk costs

Differences in CONE between Screen and Brattle for the 2012 BRA

Combined Cycle					
	CONE Area 1	CONE Area 2	CONE Area 3	CONE Area 4	CONE Area 5
2015/2016 BRA CONE, escalated by Handy Whitman Index, \$/MW-Year	\$179,456	\$158,587	\$167,663	\$158,587	\$158,587
2011 Brattle CONE	\$168,100	\$147,500	\$162,100	\$161,800	\$143,800
MOPR Screen CONE - Brattle CONE (\$/MW-year)	\$11,356	\$11,087	\$5,563	-\$3,213	\$14,787
MOPR Screen CONE - Brattle CONE (\$/MW-day) ICAP	\$31.03	\$30.29	\$15.20	(\$8.78)	\$40.40
MOPR Screen CONE - Brattle CONE (\$/MW-day) UCAP	\$32.97	\$32.19	\$16.15	(\$9.33)	\$42.93



About 150 basis points lower than was used for the Brattle CONE



About 150-200 basis points lower than was used for 2008 CONE



Cost of Financing Declined between Brattle Study and 2012 BRA

	Brattle	
	Apr-11	Apr-12
Risk Free Rate (20 Yr Treasury)	4.30%	2.75%
Market Risk Premium	6.50%	6.50%
Market Beta	1.23	1.23
Cost of Equity	12.30%	10.75%
Cost of Debt (B rating)	8.50%	7.20%
Cost of Debt (BB rating)	7.00%	5.70%
Weighted Cost of Debt	8.01%	6.90%
ATWACC	8.50%	7.45%

About \$10/MW-day lower for every 30 basis points lower on ATWACC



Forward Quotes from CME May 25, 2012

Month	WH Peak	WH Off-peak	PSEG Basis	Pepco Basis	Henry Hub
15-Jun	49.84	36.15	4.23	4.75	4.037
15-Jul	49.84	36.15	4.23	4.75	4.074
15-Aug	49.84	36.15	4.23	4.75	4.094
15-Sep	49.84	36.15	4.23	4.75	4.099
15-Oct	49.84	36.15	4.23	4.75	4.136
15-Nov	49.84	36.15	4.23	4.75	4.228
15-Dec	49.84	36.15	4.23	4.75	4.418
16-Jan	51.86	38.17	4.23	4.75	4.513
16-Feb	51.86	38.17	4.23	4.75	4.482
16-Mar	51.86	38.17	4.23	4.75	4.401
16-Apr	51.86	38.17	4.23	4.75	4.211
16-May	51.86	38.17	4.23	4.75	4.226

Implied avg. LMP below 2010 and 2011 PJM LW avg. pre-coal retirements

Combined Cycle			
	CONE Area 1	CONE Area 2	CONE Area 5
Historic (2009-2011) Net Energy Revenue Offset (\$/MW-Year)	\$83,622	\$90,814	\$82,598
Forward Looking for 2015/2016 DY using CME (\$/MW-Year)	\$100,654	\$102,123	\$100,654
Forward CME - Historic (\$/MW-Year)	\$17,032	\$11,309	\$18,056
Forward CME - Historic (\$/MW-Day)	\$46.54	\$30.90	\$49.33

Forward based on CME quotes on May 25, 2012

CC Heat rate of 6.85 mmBtu/MWh

VOM \$3.25/MWh

- Exception provision
 - Offers below the screen are permissible if such Sell Offer “*is consistent with the competitive, cost-based, fixed, net cost of new entry were the resource to rely solely on revenues from PJM-administered markets...*” 5.14(h)(8)
 - Note that does not require nominal levelization.

- November 17, 2011 Order at P 26:
 - The MOPR reference values merely establish a screen that determines whether a project sponsor will use the unit-specific, cost-justification review process, as discussed below. Offers above the MOPR reference values, based on Net CONE, are not mitigated. Offers below these MOPR values, however, are not automatically mitigated, as a mitigation determination is subject to the seller availing itself of the unit-specific review process. Thus, we find that using more conservative, prescriptive assumptions for the purposes of calculating the MOPR reference values, while providing for a unit-specific review process, is reasonable.



MOPR Screen Parameters for the 2012 BRA...

Combined Cycle Used in BRA			
	CONE Area 1	CONE Area 2	CONE Area 5
2015/2016 BRA CONE, escalated by Handy Whitman Index, \$/MW-Year	\$179,456	\$158,587	\$158,587
Historic (2009-2011) Net Energy Revenue Offset (\$/MW-Year)	\$83,622	\$90,814	\$82,598
Ancillary Services Offset, \$/MW-Year per Tariff	\$3,198	\$3,198	\$3,198
Net CONE, \$/MW-Day, ICAP Price	\$253.10	\$176.43	\$198.88
Net CONE, \$/MW-Day, UCAP Price	\$268.97	\$187.50	\$211.35
MOPR Screen Price for Combined Cycle: 90% Net CONE, \$/MW-Day, UCAP Price	\$242.07	\$168.75	\$190.22



... "Estimated" Expected Net CONE for the 2012 BRA

Combined Cycle Updated Expectations			
	CONE Area 1	CONE Area 2	CONE Area 5
2011 Brattle CONE	\$168,100	\$147,500	\$143,800
Forward Looking for 2015/2016 DY using CME (\$/MW-Year)	\$100,654	\$102,123	\$100,654
Ancillary Services Offset, \$/MW-Year per Tariff	\$3,198	\$3,198	\$3,198
Net CONE, \$/MW-Day, ICAP Price	\$175.54	\$115.24	\$109.15
Adjustment for WACC Update	\$30.00	\$30.00	\$30.00
Net CONE, \$/MW-Day, UCAP Price	\$154.67	\$90.59	\$84.11
MOPR Screen Price for Combined Cycle: 90% Net CONE, \$/MW-Day, UCAP Price	\$139.20	\$81.53	\$75.70