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Introduction

Pursuant to Attachment DD, Section 5.10(a)(v)(A, B and C) of the PJM Tariff, PJM provides the net energy and ancillary services revenue offset data for the PJM Region and each LDA or Region for which the cost of new entry is determined, using the Peak-Hour, Economic Dispatch Method (economic dispatch method).

The economic dispatch method uses technology-specific operating constraints, locational daily fuel prices, variable operations and maintenance costs, emissions costs, startup costs and locational PJM Real-Time Energy Market Prices (LMP) to calculate the net revenue for a new entrant plant. For the 2012/2013 auction, the economic dispatch method was used to calculate net revenues for the two unit GE Frame 7FA combustion turbine (CT) described in prior CONE reports.

Operating Parameters

Operating parameters may constrain the dispatch under the economic dispatch method. The operating parameters for the new entrant CT are based on a review of technology capability and are consistent with actual operating parameters offered in PJM energy markets.

The new entrant CT is dispatched in four distinct blocks of four hours of continuous output for each block beginning with the hour ending 0800 EPT through the hour ending 2300 EPT for any four-hour block when the applicable real-time LMP is greater than, or equal to, the cost to generate (including the cost for a complete start and shutdown cycle) for at least two hours during each four-hour block. If the CT is dispatched in the previous block, start costs are not included in the dispatch rate for the following block.

Forced outage rates for the new entrant CT are calculated from PJM data.¹ These class-specific outage rates were used in all revenue calculations. Each plant was also assigned a 15 day planned annual outage in the fall season.

Generation Costs

Net revenue under the economic dispatch method is the difference between the hourly, applicable, load-weighted LMP and the hourly cost to generate at the full output point. Hourly

¹ Outage data obtained from the PJM eGADS database. As final 2008 data is not yet available, the 2007 class average EFORD was used for all 2008 net revenue calculations.

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generation costs are the total of fuel costs, variable operation and maintenance (VOM) costs, emissions costs (if applicable) and start costs, all expressed in \$/MWh.

Generation costs for the new entrant CT are a function of heat rate, fuel costs, variable operating and maintenance costs (VOM), startup costs and emissions costs, in accordance with Cost Development Task Force (CDTF) guidelines.

A plant-specific VOM estimate of \$6.47/MWh was provided by Pasteris Energy, Inc. and included in the generation costs.

Start Costs

Start costs are the total of the following cost components:

- Fuel costs associated with start-up.
- Emissions costs associated with start-up when applicable (May-September).²
- Power cost/credit associated with start-up.

Each component is the product of a plant-specific consumption rate and a market-based price.³ The fuel prices are natural gas daily burner tip fuel costs from published⁴ commodity daily cash prices, with adjustment for local delivery costs.⁵ The emissions costs are based on NO_x daily prices obtained from Evolution Markets, Inc. The power cost is the net of start power consumed at the monthly auxiliary power rate and start power produced at the hourly LMP.⁶

Heat Rate

The heat rate and MW output for the CT technology are adjusted hourly for local ambient conditions, based on the plant performance data at various ambient conditions provided by

² Emissions costs associated with start-up are currently not defined in the CDTF Manual 15 but will be included in the next Manual 15 update.

³ All plant consumption rates provided by Pasteris Energy, Inc.

⁴ All fuel price data obtained from Platts. For the new entrant plant analysis in New Jersey and in Maryland, TransCo Non NY Zone 6 fuel price data were used. For the plant in Chicago, Chicago City-Gates Hub price data were used.

⁵ Adjustment varies by month, the yearly average for TransCo Non NY Zone 6 is \$.10/MBTU; for Chicago City-gates Hub, \$.20/MBTU.

⁶ The applicable LMP is for the hour prior to start.

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Pasteris Energy, Inc. and on ambient temperature data.⁷ At an ambient temperature of 59°F, the new entrant CT produces 345 MW at a heat rate of 10,554 BTU/kWh.

Emission Costs

NO_x credit costs are included in the hourly plant dispatch cost. These costs are the product of a technology-specific NO_x emission rate and the associated NO_x emission credit costs. The credit costs are obtained from historical daily spot cash prices for the applicable year.⁸ NO_x credit costs are included only during the annual NO_x attainment period from May 1 through September 30.

Dispatch Rate

The start costs are divided by the MWh associated with operating at full output for the minimum run-time and added to the generation costs to yield a dispatch rate which is compared to the applicable LMP.⁹ The dispatch rate is a function of ambient conditions and input costs, primarily the daily price of natural gas.

New Entrant Net Revenue

The new entrants' hourly dispatch rates are compared to the hourly LMP applicable for each region, subject to the dispatch parameters, to determine energy net revenue. As each unit is following PJM dispatch, operating reserve credits are applied to any day where a unit operates at a loss.

Net revenue also includes ancillary service revenue for the provision of reactive services. The net revenues reflect the technology class average reactive revenue received annually, based on actual cost of service filings with the United States Federal Energy Regulatory Commission (FERC) for the period. Table 1 shows the annual ancillary service revenue as well as the average ancillary service revenue for the periods 2005 through 2007 and 2006 through 2008.

⁷ Local ambient temperature data obtained from Meteorlogix. Philadelphia International Airport temperature data were used for AECO, BWI for Southern Maryland and O'Hare International for ComEd.

⁸ NO_x emission daily prompt prices obtained from Evolution Markets Inc.

⁹ Once the CT is running, start costs are not added to the next block's dispatch rate.

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Table 1: New entrant CT ancillary service revenue for the periods 2005-2007 and 2006-2008 (Dollars per installed MW-year):

	CT Ancillary Service Net Revenue
2005	\$2,248
2006	\$2,194
2007	\$2,154
2008	\$2,398
2005 - 2007 Avg.	\$2,199
2006 -2008 Avg.	\$2,249

New entrant net revenues were calculated for the following geographic regions: AECO, BGE and ComEd control zones, a collection of load buses in Southern Maryland, PJM RTO average, and three regional collections of load buses defined as follows:¹⁰

- Region 1: Load-weighted average LMP of PSEG, JCPL, AECO, PECO, DPL and RECO load buses.
- Region 2: Load-weighted average LMP of PPL, BGE, PEPCO, Met-Ed, PENELEC, APS and DLCO load buses.
- Region 3: Load-weighted average LMP of AEP, Dominion, DAY and ComEd load buses.

The energy and ancillary services net revenues for AECO, BGE, Southern Maryland, ComEd and the PJM RTO are shown in Table 2. The energy and ancillary service net revenues for the load-weighted regions are shown in Table 3.

¹⁰ Region 1 locational temperature and fuel assumptions are consistent with AECO, Region 2 with BGE and Region 3 with ComEd. For the PJM RTO net revenues, TransCo Non NY Zone 6 fuel price data and average hourly temperature data from 52 weather points throughout the RTO were used to develop the dispatch rate.

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Table 2: New entrant CT net revenue for the periods 2005-2007 and 2006-2008 for AECO, BGE, ComEd, Southern Maryland Load buses and the PJM RTO (Dollars per installed MW-year):

	AECO Net Revenue	BGE Net Revenue	Maryland (South) Net Revenues	ComEd Net Revenues	PJM RTO Net Revenues
2005	\$26,263	\$30,865	\$32,487	\$3,859	\$9,893
2006	\$31,968	\$40,313	\$42,489	\$9,777	\$15,050
2007	\$46,434	\$62,414	\$60,008	\$11,519	\$21,010
2008	\$63,424	\$48,523	\$45,851	\$5,230	\$13,099
2005 - 2007 Avg.	\$34,888	\$44,531	\$44,995	\$8,385	\$15,318
<u>Ancillary Services</u>	<u>\$2,199</u>	<u>\$2,199</u>	<u>\$2,199</u>	<u>\$2,199</u>	<u>\$2,199</u>
Total Offset:	\$37,087	\$46,729	\$47,193	\$10,584	\$17,517
2006 - 2008 Avg.	\$47,275	\$50,417	\$49,449	\$8,842	\$16,386
<u>Ancillary Services</u>	<u>\$2,249</u>	<u>\$2,249</u>	<u>\$2,249</u>	<u>\$2,249</u>	<u>\$2,249</u>
Total Offset:	\$49,524	\$52,665	\$51,698	\$11,091	\$18,635

Table 3: New entrant CT net revenue for the period 2005-2007 and the period 2006-2008 for proposed load-weighted regions (Dollars per installed MW-year):

	Region 1 Net Revenues	Region 2 Net Revenues	Region 3 Net Revenues
2005	\$21,681	\$16,180	\$7,094
2006	\$21,957	\$21,530	\$14,648
2007	\$35,497	\$32,243	\$19,735
2008	\$30,207	\$21,929	\$12,041
2005 - 2007 Avg.	\$26,378	\$23,318	\$13,826
<u>Ancillary Services</u>	<u>\$2,199</u>	<u>\$2,199</u>	<u>\$2,199</u>
Total Offset:	\$28,577	\$25,516	\$16,025
2006 - 2008 Avg.	\$29,220	\$25,234	\$15,475
<u>Ancillary Services</u>	<u>\$2,249</u>	<u>\$2,249</u>	<u>\$2,249</u>
Total Offset:	\$31,469	\$27,483	\$17,724

The gross Cost of New Entry (CONE), energy and ancillary service net revenue offset, and net CONE for all regions are shown in Table 4.

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Table 4: New entrant CT net CONE for the period 2006-2008 for all proposed regions

	Gross CONE (\$/MW-Year)	Total energy and ancillary service offset (\$/MW-Year)	Net CONE (\$/MW-Year)	Net CONE (\$/MW-Day)
AECO	\$135,600	\$49,524	\$86,076	\$235.82
BGE	\$125,409	\$52,665	\$72,744	\$199.30
Southern MD	\$125,409	\$51,698	\$73,711	\$201.95
ComEd	\$128,310	\$11,091	\$117,219	\$321.15
PJM-RTO	\$125,409	\$18,635	\$106,774	\$292.53
Region 1	\$135,600	\$31,469	\$104,131	\$285.29
Region 2	\$125,409	\$27,483	\$97,926	\$268.29
Region 3	\$128,310	\$17,724	\$110,586	\$302.98

Revised January 14, 2009.