UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

PJM Interconnection, L.L.C.	)	Docket Nos. ER12-1204-001, -002 and ER12-2391-000

ANSWER AND MOTION FOR LEAVE TO ANSWER
OF THE INDEPENDENT MARKET MONITOR FOR PJM

Pursuant to Rules 212 and 213 of the Commission's Rules and Regulations,[1] Monitoring Analytics, LLC, acting in its capacity as the Independent Market Monitor for PJM[2] ("Market Monitor"), submits this answer and motion to answer the answer filed by Beacon Power, LLC ("Beacon") on October 9, 2012, ("October 9th Answer") in this proceeding.

In Beacon's October 9th Answer, Beacon charges that PJM has eliminated actual mileage from performance payments settlement and therefore eliminated uniform price per movement and imposed a settlement mechanism that is "similar to pay 'as-bid'."[3] Beacon argues that this is "discriminatory against fast-responding resources."[4]

On the contrary, PJM's proposal explicitly includes actual mileage, correctly values fast and slow resources in directly comparable normalized units, and results in a uniform price for a normalized product. No discrimination occurs.

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1 18 CFR § 385.212 & 385.213 (2012).

2 Capitalized terms used herein and not otherwise defined have the meaning used in the PJM Open Access Transmission Tariff ("OATT").

3 October 9th Answer at 3.

4 *Id*. at 4

The Commission required a single market clearing approach, which required PJM to procure two input types (fast and slow) in a single market, with a single supply curve including both input types, with a single clearing price.[5] For this approach to work effectively, the two input types must be defined in common units (normalized) in the production model. This is done by defining the market in terms of one of the two input types (either fast or slow regulation), which becomes the base (normalized) unit of measure, and using the rate of substitution (the marginal benefits factor) from the production model to convert the second input type into equivalent units of the base units of measure. In order to have a single market with two products, the quantity of one product must be convertible into a quantity of the second product. The conversion is done using the marginal benefits factor. In the PJM regulation market design, MW of fast regulation are converted into MW of slow regulation. The market price is the price per MW of slow regulation. This results in a higher realized price for each cleared MW of fast regulation if the marginal benefits factor is greater than 1.0. If the marginal benefits factor is 2.0, then each MW of fast is paid as much as two MW of slow. No further conversion is necessary to ensure that fast resources are paid correctly. Given that the fast regulation MW have already been converted into slow MW and therefore paid as much as two MW of slow, it is essential that regulation units that clear in the market be paid based on the price of slow MW. Otherwise, fast regulation will be paid twice as much as appropriate.

The conversion of fast to slow means that both the MW and miles per MW are converted into slow. The relationship between MW and miles is fully captured in the

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[5] *Frequency Regulation Compensation in the Organized Wholesale Power Markets*, Order No. 755, 137 FERC ¶ 61,064 at P 99 (2011); *order on reh'g*, Order No. 755-A, 138 FERC ¶ 61,123 (2012).

marginal benefits factor. To include it again, per Beacon, would be to double count. It would therefore be incorrect to also pay fast regulation based on fast (unconverted into slow) miles, yet that is what Beacon is arguing for. The only result would be to overpay fast resources. If the marginal benefits factor is 2.0, then Beacon's proposal would result in 1 MW of fast being appropriately paid for 2 MW of slow for each MW of fast but would also result in being inappropriately paid as if each MW of slow were also producing the miles associated with fast MW.

I. ANSWER

Beacon's proposed changes would remove any meaningful connection between the relative effective prices and the relative effective regulation value of fast and slow. With no meaningful connection of price to value, the regulation market results would be irrational, inefficient and discriminatory. Beacon's proposed changes would result in overpayment of fast resources, underpayment of slow resources, and non-transparent pricing in the regulation market.

A. Beacon's Conclusion Is Based On Incorrect Assumptions About Comparable Units When Fast Resources Are Normalized in Terms of Slow Resources.

Beacon's conclusion that that PJM's proposal is discriminatory is based on the incorrect assumption that every mile of fast is equivalent to every mile of slow. This would be true only if every resource, fast or slow, were following the same signal. However, PJM's proposed rule provides separate signals for fast (Reg D) and slow (Reg A) resources.

The rate of substitution (the marginal benefits factor) in the production model depends on every MW of fast resource capacity following a fast signal (Reg D) and every MW of slow resource capacity following a slow signal (Reg A). In other words, the benefits factor converts each MW of fast capability, and its associated miles per fast MW, into an

equivalent number of slow MW, and its associated miles per slow MW.[6] This conversion or normalization, when applied to offers, results in the fast resource's total offer (including both capability and performance offers) being normalized in terms of a total slow resource total offer (including both capability and performance offers). If the marginal benefits factor is one, then one MW of fast is contributing as much to the regulation target as one MW of slow, so long as every MW of fast capacity is following a fast signal (Reg D) and every MW of slow resource capacity is following a slow signal (Reg A). If the fast resource is providing more miles per MW of capacity (based on Reg D) than the slow resource per MW of capacity (which is following Reg A), this is reflected in the total offer of the fast resource when it is normalized to equivalent MW of slow capacity. As shown in the examples outlined in Table I-1 and Table I-2 below this means that the actual mileage of fast and slow resources is explicitly included in each and every offer made and is represented in the normalized supply curve for regulation.

Table I-1 Example 1

[6] A fast resource is valuable for its quick response, but it is less valuable because it typically does not sustain the response. Conversely, a slow resource is relatively less valuable due to its slow response, but it is more valuable because it can sustain the response. Regulation service defined around only one signal cannot take full advantage of the capability that either fast or slow resources can provide. A signal designed to take advantage of a particular resource type (fast or slow), will tend to diminish the ability of the other resource type to contribute to ACE and frequency control. A combination of fast and slow resources, following separate fast (RegD) and slow (RegA) regulation signals, can do a more effective job of meeting PJM's regulation requirement (regulation performance target) than slow resources alone. The optimal combination of fast and slow resources is a function of the benefits factor and the relative costs of fast and slow resources at the margin.

Row	Item	Fast	Slow	Calculation
1	Signal (Miles/MW)	16	5	
2	Capability (MW)	1	1	
3	Performance Offer ($/Mile)	$ 1.00	$ 1.00	
4	Capability Offer (MW)	$ -	$ -	
5	Total Performance Offer ($/MW)	$ 16.00	$ 5.00	(Row 1 x Row 2 x Row 3)/Row 2
6	Total Capability Offer ($/MW)	$ -	$ -	(Row 2 x Row 4)/Row 2
7	Total Offer ($/MW)	$ 16.00	$ 5.00	Row 5 + Row 6
8	Benefit Factor	1	1	
9	Total Normalized Offer ($/MW of Slow)	$ 16.00	$ 5.00	Row 7 / Row 8
10	Clearing Price ($/MW of Slow)	$ 16.00	$ 16.00	Maximum of Total Normalized Offers Cleared
11	Effective MW of Slow	1	1	Row 2 x Row 8
12	Total Revenue ($/MW x MW of Slow)	$ 16.00	$ 16.00	Row 11 x Row 10
13	Total Cost ($/MW of Slow X MW of Slow)	$ 16.00	$ 5.00	Row 7 x Row 2
14	Net Revenue ($/MW of Slow)	$ -	$ 11.00	Row 12 - Row 13

As shown in Table I-1, assuming a benefits factor of 1, if a 1 MW fast unit incurs a cost of $1 per mile following a 16 to 1 fast signal (Miles/MW) (Row 1) and a 1 MW slow unit incurs a cost of $1 per mile following a 5 to 1 slow signal (Miles/MW) (Row 1), the performance offer of the fast unit would be $16 ($1 x 16 = $16) per MW (Row 5) and the performance offer of the slow unit would be $5 ($1 x 5 = $5) per MW (Row 5). In this example, with a benefit factor of 1 (Row 8), 1 MW of fast, with a cost of $16 per equivalent slow MW, is providing as much regulation service as 1 MW of slow (Row 11). If the market clears at $16 per equivalent slow MW (Row 10),[7] the fast resource will be fully compensated, with a net revenue of zero ($16 per MW equivalent x 1 MW - $16 per MW cost x 1 MW = 0) (Row 14), consistent with a market result for a marginal resource. The performance offer of each resource type (fast and slow) (Row 9) directly and explicitly reflects the actual total mileage related offer of each unit in comparable terms, the cost of performance in terms of normalized slow MW.

[7] Assuming away capability offers the total offer is equal to the performance offer.

Table I-2 Example 2

Row	Item	Fast	Slow	Calculation
1	Signal (Miles/MW)	16	5	
2	Capability (MW)	1	1	
3	Performance Offer ($/Mile)	$ 1.00	$ 1.00	
4	Capability Offer (MW)	$ -	$ -	
5	Total Performance Offer ($/MW)	$ 16.00	$ 5.00	(Row 1 x Row 2 x Row 3)/Row 2
6	Total Capability Offer ($/MW)	$ -	$ -	(Row 2 x Row 4)/Row 2
7	Total Offer ($/MW)	$ 16.00	$ 5.00	Row 5 + Row 6
8	Benefit Factor	2	1	
9	Total Normalized Offer ($/MW of Slow)	$ 8.00	$ 5.00	Row 7 / Row 8
10	Clearing Price ($/MW of Slow)	$ 8.00	$ 8.00	Maximum of Total Normalized Offers Cleared
11	Effective MW of Slow	2	1	Row 2 x Row 8
12	Total Revenue ($/MW x MW of Slow)	$ 16.00	$ 8.00	Row 11 x Row 10
13	Total Cost ($/MW of Slow X MW of Slow)	$ 16.00	$ 5.00	Row 7 x Row 2
14	Net Revenue ($/MW of Slow)	$ -	$ 3.00	Row 12 - Row 13

If the benefits factor were 2 (Row 8) for the marginal fast resource, as shown in Table I-2, the 1 MW fast unit still incurs a cost of $1 per mile (Row 3) following a 16 to 1 fast signal (Row 1). With a $0 capability offer (Row 4), total cost incurred per MW is $16 per fast MW (Row 13) and total offer per MW is $16 per MW (Row 7). The benefit factor of 2 is indicating that 1 MW of fast is equivalent of 2 MW (Row 11) of slow for purposes of providing regulation. The fast resource performance offer (total offer), adjusted by benefits factor, would be $8 (($1 x 16)/2 = $8)) (Row 9) per normalized MW (in equivalent slow MW). The 1 MW slow unit (Row 2), still following a 5 to 1 slow signal (Row 1), would still have a performance offer, and total offer, of $5 per slow MW (Row 5 and Row 7). If the market clears at $8 per slow MW equivalent[8] (Row 10), the fast resource will again marginal and it will again be fully compensated. The fast resource would receive $8 per slow MW equivalent. Per the benefit factor of 2, the fast resource is providing 2 slow MW equivalent per MW of fast (Row 11). The fast resource is paid $16 per fast MW ($8 x 2 Benefit Factor x

[8] Assuming away capability offers the total offer is equal to the performance offer.

1 Fast MW = $8 x 2 Slow MW equivalent = $16) (Row 12). Again, the performance offer of each resource type (fast and slow) directly and explicitly reflects the actual total mileage related offer of each unit in comparable terms, the cost of performance in terms of normalized slow MW.

Beacon's example, shown inTable I-3, demonstrates the misperception that every mile (ΔMW) of fast (Reg D) is equivalent to every mile of slow (ΔMW of Reg A).[9] In Beacon's example there is a fast resource following the Reg D signal and a slow resource following the Reg A signal, each with 1 MW of capability (Row 2), both with 100 percent performance scores. The fast resource is asked to provide 16 miles (ΔMW per MW of capacity) per MW of capacity (Row 1). The slow resource is asked to provide 5 miles (ΔMW per MW of capacity) per MW of capacity (Row 1). The fast resource has a performance bid ($/ΔMW) of $0.50 (Row 3) and the slow resource has a performance bid ($/ΔMW) of $2.00 (Row 3). Beacon does not provide a capability offer for either resource (Row 4).

Table I-3 Beacon's Base Example

[9] October 9th Answer at 4–5.

Row	Item	Fast	Slow	Calculation
1	Signal (Miles/MW)	16	5	
2	Capability (MW)	1	1	
3	Performance Offer ($/Mile)	$0.50	$ 2.00	
4	Capability Offer (MW)	$ -	$ -	
5	Total Performance Offer ($/MW)	$ 8.00	$ 10.00	(Row 1 x Row 2 x Row 3)/Row 2
6	Total Capability Offer ($/MW)	$ -	$ -	(Row 2 x Row 4)/Row 2
7	Total Offer ($/MW)	$ 8.00	$ 10.00	Row 5 + Row 6
8	Benefit Factor	1	1	
9	Total Normalized Offer ($/MW of Slow)	$ 8.00	$ 10.00	Row 7 / Row 8
10	Clearing Price ($/MW of Slow)	$ 10.00	$ 10.00	Maximum of Total Normalized Offers Cleared
11	Effective MW of Slow	1	1	Row 2 x Row 8
12	Total Revenue ($/MW x MW of Slow)	$ 10.00	$ 10.00	Row 11 x Row 10
13	Total Cost ($/MW of Slow X MW of Slow)	$ 8.00	$ 10.00	Row 7 x Row 2
14	Net Revenue ($/MW of Slow)	$ 2.00	$ -	Row 12 - Row 13

The correct solution to Beacon's first example is outlined in Table I-3. As shown in Table I-3, the total adjusted (normalized) performance offers ((capability * performance bid * mileage)/(Benefits Factor * Accuracy * capability)[10] is $8.00 per MW ((1 MW * $0.50/mile * 16 miles)/ (1 * 1 * 1 MW) = $8/MW)) for the fast resource (Row 9). The total adjusted (normalized) performance offers ((capability * performance bid * mileage)/(Benefits Factor * Accuracy * capability)) is $10.00 per MW ((1 MW * $2.00/mile * 5 miles)/ (1 * 1 * 1 MW) = $10/MW)) for the slow resource (Row 9). Note that, assuming a benefit factor of 1 and accuracy of 1, the adjusted (normalized) offers are made in equivalent regulation miles per MW of *slow* basis. This means that the 1 MW fast resource, following the 16 to 1 Reg D signal, with a total performance offer of $8 per MW, is providing the same regulation contribution (1 MW of slow equivalent) as the 1 MW of slow resource that costs $10 per MW following the 5 to 1 Reg A signal (Row 9 and Row 11). The use of the benefit and

[10] All prices are $/MW.

accuracy factor in the calculation has made the units of Fast directly comparable to units of Slow, thereby making the use of a single supply curve of common units possible.

In the absence of a capability offer, the performance offer per MW equals the total offer of the resources, and this market will clear at $10.00 per equivalent slow MW (Row 10). Beacon notes that, in this instance (where the benefit factor is one), "a fast resource will receive the exact same payment for performance as a slow resource even though the fast resource is directed by PJM to follow a dispatch signal from PJM that requires significantly more up and down regulation movement."[11]

Beacon mischaracterizes the result. Beacon ignores the fact that the offers of the fast and slow resource were normalized in terms of units of slow MW. Since the offers are made up entirely of performance costs, the offers were normalized in units of equivalent regulation miles per MW of *slow*. If, at this market solution (benefit factor of one), the Reg D signal is asking for 16 miles (Miles per MW of Capacity) per MW of fast and the Reg A signal is asking for 5 miles (Miles per MW of Capacity) per MW of slow, this means that the 16 miles per MW of fast is providing the *same amount* of regulation service as 5 miles per MW of slow. This means that the 1 MW fast resource, following the 16 to 1 Reg D signal, is providing the equivalent of 1 MW of slow following the 5 to 1 Reg A signal. Alternatively, at the market solution every 3.2 miles of fast (16 miles/5 miles) is providing as much regulation as 1 mile of slow.

Noting that all prices and units have been normalized (assuming a benefit factor of one) in terms of slow MW following a 5 to 1 signal, the slow equivalent total performance

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[11] *Id*. at 3–4.

cost of the fast resource is a normalized $8 per slow MW (as noted above and in Beacon's example). In normalized per slow mile terms, the fast resource costs $1.60 per slow equivalent mile ($8.00/5 miles = $1.60 per mile or 3.2 miles x $0.50 = $1.60). The slow resources total performance cost is $10 per slow equivalent MW (as noted above and in Beacon's example). In normalized per slow mile terms, the slow resource costs $2.00 per slow equivalent mile ($10.00/5 miles = $2.00 per mile).

At the market clearing price of $10 per slow MW, the fast resource is inframarginal, whether examined in terms of dollars per slow equivalent mile or dollar per slow equivalent MW. The fast resource is paid $10 per slow equivalent MW, while incurring (assuming a cost based offer) a cost of $8 per slow equivalent MW (a margin of $2 per equivalent MW). The fast resource is paid $2 per slow equivalent miles, while incurring a cost (assuming a cost based offer) of $1.60 per slow equivalent mile (a margin of $0.40 per slow equivalent mile).

In either case (rolled up in equivalent miles or MW), with a benefit factor of one, the fast resource's margin over cost is $2.00 regardless of the calculation on the basis of MW or miles ($10.00 - $8.00 = $2). The slow resource, with its offer of $2.00 a mile and a 100 percent performance factor, costs $2.00 per equivalent slow mile. The slow resource has a margin over cost of zero in terms of both MW and miles.

This is the appropriate result. If the market clearing price is, in normalized terms, $10 per MW of slow, it is appropriate that the fast and slow be paid, in total, $10 per equivalent MW of slow for their service. Any other price result would be discriminatory, inefficient, and would distort the market solution on a normalized basis.

B. Beacon's Approach Overpays Fast Resources and Underpays Slow Resources for Equivalent Miles.

Beacon argues that PJM should include "actual mileage in the credit for Regulation performance at Schedule 1, section 3.2.2(g) of the Operating Agreement, so that resources will be credited for regulation performance based on the actual amount of regulation performance the resources provide during the market hour."[12] Beacon argues that, in addition to this change, "PJM should convert the Performance Regulation market-clearing price from a $/MW to a $/ΔMW (using the mileage of the resource that sets the Performance Regulation market-clearing price) so that there will be no double counting of mileage in the settlement."[13]

Because PJM's proposal already included expected miles, Beacon's proposed changes would cause double counting of fast resource miles and the undercounting of slow resource miles. Beacon's proposal would therefore result in significant overpayment of fast resources when slow resources are marginal and significant underpayment of slow resources when fast resources are marginal. Beacon's proposal would undermine the entire market design by disconnecting the relationship between offers, prices, relative value and payment.

1. Beacon's Approach Overpays Inframarginal Fast MW.

Beacon's second example demonstrates that Beacon's suggested changes distort relative effective prices of fast and slow, thereby causing the regulation market results to be

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12 *Id*. at 6.

13 *Id*. at 6.

inefficient and discriminatory.[14] As in Beacon's first example (See Table I-3 above), there is a fast resource following the Reg D signal and a slow resource following the Reg A signal, each with 1 MW of capacity, both with 100 percent performance scores. The fast resource following the Reg D signal is asked to provide 16 miles (i.e. miles per MW of capacity) per MW of capacity. The slow resource following the Reg A signal is asked to provide 5 miles per MW of capacity. The fast resource has a performance bid ($/ miles) of $0.50 per mile and the slow resource has a performance bid ($/miles) of $2.00 per mile. Again, Beacon does not provide a capacity offer for either resource.

As before, the total adjusted (normalized) performance offers ((capability * performance bid * mileage)/(Benefits Factor * Accuracy)) is $8.00 for the fast resource and $10.00 for the slow resource. As in the first example, the adjusted (normalized) offers are made in equivalent regulation miles per MW of *slow* basis. In the absence of a capability offer, the performance offer equals the total offer of the resource, and this market will clear at $10.00 per MW. Under the current PJM proposal, fast and slow resources are credited for the regulation performance based on the actual amount of regulation performance the resources provide during the market hour. All offers, capability and performance are normalized in terms of slow resource regulation capability and performance. The market result is a normalized per MW of slow price for both capability and performance.

Beacon argues that the clearing price for performance ($10.00) should be converted to dollars per mile of the marginal resource, and then the nonnormalized miles of every

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[14] *Id*. at 7.

resource should be used to determine total payment.[15] This approach incorrectly mixes units of measure by multiplying the market price in terms of equivalent (normalized) slow miles ($2 per slow mile) by nonnormalized fast miles (16 miles per MW of fast). Under Beacon's proposal the fast resource, which was inframarginal in the market clearing with a total performance offer of $8 for its 16 miles ($0.50 x 16), would be paid $32 ($2 * 16 miles) per slow effective MW instead of the actual clearing price of $10 per slow effective MW.

Beacon's proposal would result in fast resources being paid a per unit price in excess of the actual clearing price in the market. Under Beacon's approach, the payment to the inframarginal fast unit has nothing to do with its actual offer or its value to the system. If $32 per equivalent slow MW is the actual cost of the resource, it should be represented in the supply curve accordingly, as an extremely expensive unit. As the market price does not support this over payment, the residual will be effectively collected via uplift on regulation customers. This result is untenable and incorrect because it disconnects the basis of the market price, the interaction between supply and demand, and the basis of basis of payment for resources that clear in the market.

2. Beacon's Approach Underpays Inframarginal Slow MW.

The market distortion problem that Beacon's proposal creates is also evident in the case where the fast resource was marginal instead of the slow resource. When a slow resource is marginal, Beacon's proposal would result in significant overpayment of inframarginal fast resources. Table I-4 (Inframarginal Slow Example) shows an example where the fast resource is on the margin and the slow resource is inframarginal. As in

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[15] *Id*. at 7.

Beacon's previous example, there is a fast resource following the Reg D signal (Row 1) and a slow resource following the Reg A signal (Row 1), each with 1 MW of capacity (Row 2), both with 100 percent performance scores. PJM asks the fast resource following the Reg D signal to provide 16 miles (Miles per MW of capacity) per MW of capacity. PJM asks the slow resource following the Reg A signal to provide 5 miles (Miles per MW of capacity) per MW of capacity (Row 1). The fast resource has a performance bid ($/Mile) of $0.50 per mile and the slow resource has a performance bid ($/Mile) of $1.00 (Row 3) per mile. As in the Beacon case, neither resource provides a capacity offer (Row 4).

Table I-4 Inframarginal Slow Example

Row	Item	Fast	Slow	Calculation
1	Signal (Miles/MW)	16	5	
2	Capability (MW)	1	1	
3	Performance Offer ($/Mile)	$0.50	$ 1.00	
4	Capability Offer (MW)	$ -	$ -	
5	Total Performance Offer ($/MW)	$ 8.00	$ 5.00	(Row 1 x Row 2 x Row 3)/Row 2
6	Total Capability Offer ($/MW)	$ -	$ -	(Row 2 x Row 4)/Row 2
7	Total Offer ($/MW)	$ 8.00	$ 5.00	Row 5 + Row 6
8	Benefit Factor	1	1	
9	Total Normalized Offer ($/MW of Slow)	$ 8.00	$ 5.00	Row 7 / Row 8
10	Clearing Price ($/MW of Slow)	$ 8.00	$ 8.00	Maximum of Total Normalized Offers Cleared
11	Effective MW of Slow	1	1	Row 2 x Row 8
12	Total Revenue ($/MW x MW of Slow)	$ 8.00	$ 8.00	Row 11 x Row 10
13	Total Cost ($/MW of Slow X MW of Slow)	$ 8.00	$ 5.00	Row 7 x Row 2
14	Net Revenue ($/MW of Slow)	$ -	$ 3.00	Row 12 - Row 13

In the Inframarginal Slow Example, the total adjusted (normalized) performance offers ((capability * performance bid * mileage)/(Benefits Factor * Accuracy * capability)) is $8.00 per MW for the fast resource, but only $5.00 per MW for the slow resource. Because the adjusted (normalized) offers are made in equivalent regulation miles per MW of *slow*, in the absence of a capacity offer (Row 4), the performance offer equals the total offer of the resources, and this market will clear at $8.00 per MW (Row 9).

Beacon's proposal would convert the clearing price for performance ($8.00) (Row 10) into $ per mile of the marginal resource, and then use the nonnormalized miles of every resource to determine total payment.[16] In this example (Table I-4) the fast resource is marginal, with a mile per MW of 16. Beacon's first step (not in the table) results in a performance price then set to $0.50 per mile for both fast and slow resources ($8.00/ 16 miles = $0.50 per mile). Beacon would then pay the fast resource $0.50 per nonnormalized mile and pay the slow resource $0.50 per nonnormalized mile. Because it is marginal, Beacon would pay the fast resource only $8.00 (16 Miles x $0.50 = $8.00) per MW of slow effective capability, not the $32 per slow effective MW it received for being inframarginal. Although this result is consistent with the definition of the marginal offer, Beacon does not and cannot explain how such a dramatic difference in payment for the fast resource, based solely on whether a fast resource or slow resource is marginal, is part of a coherent market design.

Further, under Beacon's proposal, the slow *inframarginal* unit with an offer of $5.00 per MW of slow is only paid a price of $2.50 ($0.50 x 5 miles = $2.50) per slow MW, resulting in a total payment of only $2.50. This result is inconsistent with a market clearing price for an inframarginal resource, and inconsistent with the correct market result that is shown in Table I-4. Despite being inframarginal, the slow resources loses $2.50 ($2.50 - $5.00 = -$2.50) under the Beacon proposal when it should have a margin of $3.00. When a fast resource is marginal, Beacon's proposal results in significant underpayment of inframarginal slow resources.

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[16] *Id*. at 7.

Beacon's proposal is inconsistent with rational, internally consistent market design. Applied to a marginal fast resource's unmodified miles, the proposal ignores the actual relationship, in terms of relative effectiveness and relative cost of fast and slow resources at a given ratio of fast and slow used to meet the regulation requirement. Whether applied to either a fast or slow resource, Beacon's approach prevents the benefits factor from serving its purpose, the normalization of fast and slow resources into a common input product (slow). Without a common input, there cannot be a single market. Accordingly, Beacon's proposal should be rejected.

C. Beacon Claims That It Is More Difficult and Costly for Fast Resources to Follow the REG D Signal Than It Is for Slow Resources to Follow the Reg A Signal.

In support of its proposal to pay fast resources above market prices, Beacon argues that "(i)t is more difficult for a resource to accurately follow a fast changing signal than a slow changing signal."[17] Beacon also argues, "a resource following a fast signal versus a slow signal likely incurs more cost."[18] Beacon provides no basis for either statement. Beacon's statements would be irrelevant even if supported.

A qualifying resource (a resource that has passed tests indicating it can follow the chosen signal) can choose whether, on an hour by hour basis, to offer into the market as a fast or a slow resource. This means that if a battery or fly wheel can better follow Reg A than Reg D, it has that option under PJM's rules.

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17 *Id*. at 6.

18 *Id*. at 6.

If a resource following a fast signal incurs more cost than it does following a slow signal, this will be reflected directly in the unit's offers. If a one MW unit incurs a cost of $1 per mile following a 16 to 1 signal and a cost of $1 per mile following a 5 to 1 slow signal, the performance offer of the unit would be $16 ($1 x 16 = $16) in the fast market and $5 ($1 x 5 = $5) in the slow market. The performance offer directly reflects the actual mileage related costs of the unit following Reg A or Reg D, based on the cost incurred by participating as it follows the Reg A or Reg D signal, based on the offers per mile made by the participant. The use of the benefits factor makes the offers of MW of fast directly comparable to offers of MW of slow, and allows the PJM market to pick the optimal (least cost) ratio of fast and slow resources to meet it regulation requirements.

II. MOTION FOR LEAVE TO ANSWER

The Commission's Rules of Practice and Procedure, 18 CFR § 385.213(a)(2), do not permit answers to answers or protests unless otherwise ordered by the decisional authority. The Commission has made exceptions, however, where an answer clarifies the issues or assists in creating a complete record.[19] In this answer, the Market Monitor provides the Commission with information useful to the Commission's decision-making process and

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[19] *See, e.g., N.Y. Indep. Sys. Operator, Inc.*, 121 FERC ¶61,112 at P 4 (2007) (answer to protest accepted because it provided information that assisted the Commission in its decision-making process); *PJM Interconnection, L.L.C.*, 119 FERC ¶61,318 at P 36 (2007) (accepted answer to answer that "provided information that assisted … decision-making process"); *California Independent System Operator Corporation*, 110 FERC ¶ 61,007 (2005) (answer to answer permitted to assist Commission in decision-making process); *New Power Company v. PJM Interconnection, L.L.C.*, 98 FERC ¶ 61,208 (2002) (answer accepted to provide new factual and legal material to assist the Commission in decision-making process).

which provides a more complete record. Accordingly, the Market Monitor respectfully requests that this answer be permitted.

III. CONCLUSION

The Market Monitor respectfully requests that the Commission afford due consideration to this answer as the Commission resolves the issues raised in this proceeding.

Respectfully submitted,

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Dated: October 22, 2012

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding.

Dated at Eagleville, Pennsylvania,
this 19th day of October, 2012.

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