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March 4, 2005

Honorable Magalie Roman Salas
Secretary
Federal Energy Regulatory Commission
888 First Street, N.E., Room 1A
Washington, D.C. 20426

Re: PJM Interconnection, L.L.C., Docket No. EL03-236-00__
        (Compliance Filing)

Dear Ms. Salas:

In compliance with the Federal Energy Regulatory Commission's ("Commission") order issued on January 25, 2005 in PJM Interconnection, L.L.C., 110 FERC ¶ 61,053 (2005) ("Rehearing Order"), PJM Interconnection, L.L.C. ("PJM") files a Declaration of Joseph E. Bowring, the PJM Market Monitor, addressing the three-pivotal supplier test PJM has established as a trigger for suspending offer capping.[1]

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[1]   On February 28, 2005, the Commission issued a Notice of Extension of Time granting PJM's request for an extension of time until March 3, 2005 to file a response to additional directives of the Rehearing Order regarding PJM's three-pivotal supplier test. PJM Interconnection, L.L.C., Notice of Extension of Time, Docket No. EL03-236-005 (Feb. 28, 2005). On March 3, 2005, PJM requested a further one-day extension of time until March 4, 2005 to submit the compliance filing.

I.   PJM's Three-Pivotal Supplier Test Is Consistent With The Market Screens In the AEP Order[2]

In the Rehearing Order, the Commission directed PJM to address why the screens set forth in the AEP Order "or reasonable derivations of these screens, are not appropriate for determining when load pockets are sufficiently competitive to permit relaxation of mitigation."[3] As Mr. Bowring explains in his declaration, the three-pivotal supplier test is "an explicit derivation, within the context of the Delivered Price Test, of how to weigh the various structural features of a particular type of local market." It is consistent with the Commission's market power screens and represents the practical application of those screens in real time.[4] The three-pivotal supplier test incorporates a balance of considerations consistent with the Commission's AEP Order and does so in a way that can be applied in a real-time, dynamic setting.[5] The AEP Order tests are used to determine whether to allow market-based rates for a supplier under all market conditions and typically for a considerable period of time.[6] In contrast, the determination of whether to suspend offer capping in PJM must be based on actual market conditions and the actual potential to exercise market power in real time, or in specific hours of the day-

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[2]   AEP Power Mktg., Inc., 107 FERC ¶ 61,018 (2004) at P 107 ("AEP Order").

[3]   Rehearing Order at P 84.

[4]   See Attachment 1: Declaration of Joseph E. Bowring ("Bowring Declaration") at P 8.

[5]   See id. at PP 8-9.

[6]   Id. at P 10.

ahead market.[7] The three-pivotal supplier test permits the suspension of offer-capping on a dynamic basis when market conditions permit and is a reasonable derivation of the Commission's AEP Order tests. As Mr. Bowring explains more fully in his declaration, the three-pivotal supplier test incorporates "all the relevant aspects of market structure represented in the tests specified in the AEP Order in a single test that can by applied dynamically."[8]

II. The Use Of The Three-Pivotal Suppliers Test As A Trigger For Suspension Of Offer Capping Is Appropriate Without Modification

In the Rehearing Order, the Commission directed PJM to "address whether other modifications of its three-pivotal supplier test would be appropriate."[9] As Mr. Bowring explains, the three-pivotal supplier test "is a reasonable derivation of the Commission's Delivered Price market power tests, as applied in the special circumstances of load pockets that arise in an hourly market as a result of security constrained economic dispatch with locational market pricing and inelastic demand."[10] The three-pivotal supplier test further provides a clear test "for whether excess supply is adequate to offset other structural features of the market and result in an adequately competitive market structure."[11]

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[7]   Id.

[8]   Id. at P 12.

[9]   Rehearing Order at P 84.

[10]   Bowring Declaration at P 13.

[11]   Id. at P 15.

In contrast, as Mr. Bowring explains, "a one-pivotal supplier test by itself (meaning two jointly pivotal suppliers are considered competitive) is not an adequate market structure test because it rules out only the extreme case of structural market power (monopoly) in power markets with inelastic demand."[12] Similarly, a two-pivotal supplier test (where three jointly pivotal suppliers are considered competitive) "is not an adequate market structure test because markets that pass this test exhibit market structure conditions that fail the Commission market power tests including those measured by HHI and market share, show significant markups under Cournot competition and other models of competitive behavior, and result in market structures where various forms of unilateral or parallel behavior can result in prices significantly greater than the competitive level."[13] It is for this very reason that the Commission presumably did not simply adopt a one-pivotal supplier test in the AEP Order, opting instead for a more detailed, interactive set of screens and tests which incorporate measures of market concentration and define the relevant market. The three-pivotal supplier test incorporates all of these tests in a manner which is capable of execution and is clear and predictable to the marketplace. At bottom the three-pivotal supplier test is an appropriate test "because it will tend to be associated with HHI levels within the reasonably competitive range, will result in lower mark-ups under Cournot competition, and make parallel behavior more difficult."[14]

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[12] Id. at P 19.

[13] Id. at P 20.

[14] Id. at P 22.

III.   The Three-Pivotal Supplier Test Is Not Too Restrictive

Contrary to protesters, the three-pivotal supplier test is not too restrictive. Protesters' complaint that the use of the three-pivotal supplier test will result in offer caps for local market power never being lifted until there is significant new entry by unaffiliated competitors or divestiture by existing participants that results in significant entry by unaffiliated competitors misses the mark.[15] As Mr. Bowring explains, current load pockets in PJM are not competitive.[16] Until there is a change in the competitive structure of PJM load pockets, there is no reasonable basis for removing the offer capping rule.[17] See La Energy and Power Authority v. FERC, 141 F.3d 364, 365 (D.C. Cir. 1998) ("Where there is a competitive market, [FERC] may rely on market based rates.").

IV.   Documents Enclosed

PJM encloses the original and five copies of each of the following:

1.   This transmittal letter;

2.   Attachment 1: Declaration of Joseph E. Bowring

3.   Attachment 2: Form of Federal Register Notice (also enclosed on diskette).

VI.   Service and Federal Register Notice

PJM has served a copy of this filing upon all PJM members, each entity

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[15]   See id. at P 24, see also generally Protest of Reliant Energy, Inc., Docket No. EL03-236-002 (Aug. 6, 2004); Motion For Leave To Protest Out Of Time And Protest Of The Electric Power Supply Association, Docket No. EL03-236-002 (Aug. 23, 2004).

[16]   Bowring Declaration at P 24.

[17]   See id.

designated on the official service list compiled by the Secretary in this proceeding and

each state electric utility regulatory commission in the PJM region. A form of notice

suitable for publication in the <u>Federal Register</u> is attached and is enclosed on diskette.

Respectfully submitted,

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Attachment 1

Declaration of Joseph E. Bowring

PJM Interconnection, L.L.C.   )   Docket No. EL03-236-000

DECLARATION OF JOSEPH E. BOWRING

I, Joseph E. Bowring, Manager of the PJM Interconnection, L.L.C. Market Monitoring Unit, depose and say as follows:

Introduction

1. The Federal Energy Regulatory Commission's ("Commission") order of January 25, 2005[1] instituted a Section 206 inquiry "to determine whether the three-pivotal supplier test needs to be revised," and required, among other things, that PJM Interconnection, L.L.C. ("PJM") make a compliance filing to: (a) "respond to the protests and explain why the existing market power screens or reasonable modifications of those screens would not be an appropriate means of determining market power in load pockets;" and (b) "address whether other modifications of its three-pivotal supplier test would be appropriate, such as using only two pivotal suppliers, rather than three."[2]

2. Under the existing rules, approved by the Commission, which govern local market power mitigation in PJM, PJM offer caps any unit that runs out of merit order to control a transmission constraint, if three conditions are met: (a) the local market structure is not competitive, (b) the market participant is offering energy at a price above a competitive level, and (c) acceptance of the participant offer would result in a market clearing price above a competitive level. The local market structure is considered not competitive if it does not pass the three-pivotal supplier test discussed below. Offers are considered to be above a competitive level if they exceed unit marginal cost plus 10 percent.[3] Acceptance of a participant offer is considered to result in a market price above a competitive level if the unit is being dispatched out of merit order and is the marginal unit required to control a constraint and therefore sets locational marginal price (if it is not the marginal unit, then a unit receives the higher applicable LMP and, as a practical matter it therefore is not offer capped). When all three conditions are met, an offer price cap is applied to the unit. These rules produce

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[1]   PJM Interconnection, L.L.C., 110 FERC ¶ 61,053 (2005) ("Rehearing Order").

[2]   Id. at P 84.

[3]   These tests are specified in the PJM Operating Agreement, Sections 6.4.1 and 6.4.2. The Commission has approved the use of marginal cost plus either $40 per MWh or unit-specific going forward costs for frequently mitigated units.

prices in otherwise non-competitive constrained areas at a level equivalent to the price that a competitive market would produce.

3. Under the existing rules, PJM will suspend offer capping when structural market conditions, as determined by the three-pivotal supplier test, indicate that suppliers are reasonably likely to behave in a competitive manner. The goal is to apply a clear rule to limit the exercise of market power by generation owners in load pockets but to lift offer capping when the exercise of market power is unlikely.

4. PJM's test for local market power based on the number of pivotal suppliers is grounded in and derived from the principles of the AEP Order,[4] has a solid basis in economics, and is clear and unambiguous to apply in practice. As explained below, the three-pivotal supplier test represents a clear and practical way to implement the Commission's AEP market power tests in real time in an hourly single clearing price market. There is no perfect test, but the three-pivotal supplier test for local market power strikes a reasonable balance between the requirement to limit extreme structural market power and the goal of limiting intervention in markets where competitive forces are adequate.

The Three-Pivotal Supplier Test and the Commission's Market Power Tests

5. The Commission adopted market power screens and market power tests in the AEP Order. The AEP Order defined two indicative market power screens and a more dispositive Delivered Price Test for market power. As the Commission stated with reference to the Delivered Price Test: "Using the economic capacity for each supplier, applicants should provide pivotal supplier, market share and market concentration analyses. Examining these three factors with the more robust output from the Delivered Price Test will allow applicants to present a more complete view of the competitive conditions and their positions in the relevant markets." Id. at P 107.

6. The Commission's Delivered Price Test for market power appropriately defines the relevant market and using that definition, applies pivotal supplier, market share and market concentration analyses. The Commission defines the relevant market under the Delivered Price test as including suppliers with "costs less than or equal to 1.05 times the market price," i.e. those "suppliers that could sell into the destination market at a price less than or equal to 5% over the market price." Id. at App. F, para. (4). The defined tests are failed if either the supplier in question is pivotal, it has a market share greater than or equal to 20 percent, or if the HHI in the relevant market is greater than or equal to 2500. A supplier is pivotal under the market power test if it is pivotal on a stand-alone basis in the relevant market as defined by the Delivered Price Test. The Commission also stated that there are interactions among the results of each analysis under the Delivered Price Test and indicates that some interpretation is required and is expected. Id. at P 111.

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[4]   AEP Power Mktg., 107 FERC ¶ 61,018 (2004) ("AEP Order")

7. As the Commission stated with reference to the relationship between concentration statistics and individual market shares, "[c]oncentration statistics can indicate the likelihood of coordinated interaction in a market. All else being equal, the higher the HHI, the more firms can extract excess profits from the market. Likewise a low HHI can indicate a lower likelihood of coordinated interaction among suppliers and could be used to support a claim of a lack of market power by an applicant that is pivotal or does have a 20 percent or greater market share in some or all season/load conditions. For example, an applicant with a market share greater than 20 percent could argue that that [sic] it would be unlikely to possess market power in an unconcentrated market (HHI less than 1000)." Id.

8. PJM's three-pivotal supplier test represents the practical application of the Commission's market power tests in real time and is consistent with the Commission's statement that the various elements of market structure must be weighed. The three-pivotal supplier test is an explicit derivation, within the context of the Delivered Price Test, of how to weigh the various structural features of a particular type of local market. Such an explicit derivation is required by the specific circumstances under which the rule will be applied in PJM. The application of a market power test needs to be clear and readily implemented in practice. The application of a market power test must take account of the actual context. In the case of offer capping for local market power, PJM needs to dynamically apply a real-time test, consistent with the current real-time test for offer capping. The market is dynamic; conditions on the network change unexpectedly and dynamically. The impact of suppliers within a load pocket may vary by constraint and may vary with other system conditions. (This impact is measured by a distribution factor, calculated by PJM in real time, which is part of the real-time application of the rule. The distribution factor measures the electrical impact of a specific unit on the identified constraint and thus determines the MW that can be supplied to resolve the constraint.) Any market power test must be clearly defined and must be capable of automatic application in this context without a requirement for the exercise of judgment or discretion.[5] The three-pivotal supplier test can be defined by rule and applied automatically by PJM in real time consistent with the way in which local offer capping is implemented under PJM market rules.

9. The three-pivotal supplier test incorporates a balance of considerations consistent with the Commission's AEP Order and does so in a way that can be applied in a real-time, dynamic setting. The Commission's market power tests contemplate the application of judgment, of balancing the results of multiple analyses, and the possibility of submitting additional information. Applying these tests, including market shares, HHIs, delivered price, pivotal suppliers, and judgments about the interplay among them, is not possible in a real-time setting. In real time, the test must be automated and it is not possible to weigh the relative significance of the various aspects of market structure or to apply judgment. Thus, the use of only one of the

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[5] This is consistent with the Commission's statements in the May 6 Order (PJM Interconnection, L.L.C., 107 FERC ¶ 61,112 (2004)) that clear procedures are required and that discretion in determining the degree of competitiveness should be avoided.

three Delivered Price Test analyses, a one-pivotal supplier test, would not meet the goal of the Delivered Price Test as set forth by the Commission. While the three-pivotal supplier test standing alone may appear more stringent than the one-pivotal supplier analysis that is part of the Delivered Price Test, the three-pivotal supplier analysis in fact is not more stringent than the complete Delivered Price Test, taken as an integrated whole. The application of the one-pivotal supplier test as the only test for the determination of market power would ignore the other parts of the Commission's tests for market power specified in the AEP Order. The two-pivotal supplier test would do the same.

10. The three-pivotal supplier test attempts to capture the balance inherent in the Delivered Price Test in a single test that can be used formulaically and automatically in the real-time circumstances contemplated. The Commission's determination to grant market-based rates under the AEP tests is a determination applicable for all market conditions and typically applies for a considerable period of time (three years). In contrast, in the PJM real-time context, where all loads pay a single, hourly clearing price based on the highest accepted generation offers, the market can and should be examined dynamically, to test for market power each hour in which prices could be established at non-competitive levels in the face of market power. Market power could be determined to exist for a period of hours and to not exist for another period of hours in the same day and for the same constraint. The determination must be based on actual market conditions, including dynamically arising transmission constraints which define more limited geographic markets, and the actual potential to exercise market power in real time, or in specific hours of the day-ahead market. A finding that a market is not structurally competitive for one period of time does not mean that it will not be found to be competitive when market conditions change. The PJM test will permit the suspension of offer capping in a flexible manner when market conditions permit.

11. An essential part of the reason that the three-pivotal supplier test is a reasonable derivation of the Commission's market power tests is that PJM's three-pivotal supplier test includes a broader definition of the relevant market than the Commission's AEP delivered price test. While the Commission's delivered price test defines the relevant market to include all suppliers with costs less than or equal to 1.05 times the market price, PJM's three-pivotal supplier test includes all suppliers, regardless of their position on the relevant market supply curve. This means that the three-pivotal supplier test includes more competitors in its definition of the relevant market than the AEP delivered price test. The more competitors included, the more likely a market will be determined to be structurally competitive, all else equal. The three-pivotal supplier test is also consistent with the Commission's Delivered Price test in that it tests for the interaction between individual participant attributes and features of the market structure. The three-pivotal supplier test is an explicit test for the potential ability to profitably engage in unilateral action as well as coordinated action that accounts simultaneously for market shares and the supply-demand balance in the market. The three-pivotal supplier test focuses on competitive conditions at the margin, where the market price is determined. While, the three-pivotal supplier test

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can find a market structure competitive that would not pass the Commission market power tests and the reverse is also true, there is considerable overlap in the results of the tests as applied to static markets. The three-pivotal supplier test is designed to also be applicable on a real-time basis in a dynamic market environment.

12. It is impractical or impossible to apply all the tests specified in the AEP Order on an hourly basis in the PJM day-ahead or real-time markets. It is the intent of the three-pivotal supplier test to incorporate all the relevant aspects of market structure represented in the tests specified in the AEP Order in a single test that can by applied dynamically. As explained below, the results of the three-pivotal supplier test are consistent with the results of the AEP Order tests.

The Three-Pivotal Supplier Test

13. As explained below, the three-pivotal supplier test is a reasonable derivation of the Commission's Delivered Price market power tests, as applied in the special circumstances of load pockets that arise in an hourly market as a result of security constrained economic dispatch with locational market pricing and inelastic demand.

14. The three-pivotal supplier test represents a significant relaxation of the previously existing PJM local market power rule, which did not include any market structure test to determine whether to lift offer capping. As recognized by PJM when the local market power rule was proposed in 1997 and as has continued to be the case, the local markets created by transmission constraints are generally very small and not structurally competitive. Therefore, it is not surprising that tests for market power generally will not find a large number of constraints for which there are a sufficient number of competitors available to control the constraint and allow the lifting of offer capping. PJM's annual State of the Market Reports show that offer capping in PJM occurs relatively infrequently. Nonetheless, it is appropriate to have a clear test as to when an otherwise non-competitive local market becomes adequately competitive, through additional entry, divestiture of generation or enhancement of transmission facilities, to permit the relaxation of local market power mitigation.

15. The three-pivotal supplier test explicitly incorporates the relationship between supply and demand in the definition of pivotal. The three-pivotal supplier test provides a clear test for whether excess supply is adequate to offset other structural features of the market and result in an adequately competitive market structure. The greater the supply relative to demand, the less likely that three suppliers will be jointly pivotal, all else being equal.

16. The three-pivotal supplier test, like the AEP tests, was designed in the context of the elasticity conditions present in wholesale power markets. As the Commission stated: "It must be recognized that demand elasticity is extremely small in electricity markets; in other words, because electricity is considered an essential service, the demand for it is not very responsive to price increases." AEP Order at P 103. The generally accepted fact that electricity markets exhibit very low price elasticity of

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demand is an important variable in determining whether a particular market structure is likely to result in a competitive outcome. It is essential that market power tests and evaluations of market power tests neither ignore elasticity nor make counterfactual elasticity assumptions. As the Commission stated, "[i]n markets with very little demand elasticity, a pivotal supplier could extract significant monopoly rents during peak periods because customers have few, if any, alternatives." Id. at P 72. The Commission also stated, in reference to dominant firm models of behavior, "In both of these models, the lower the demand elasticity, the higher the mark-up over marginal costs. It must be recognized that demand elasticity is extremely small in electricity markets; in other words, because electricity is considered an essential service, the demand for it is not very responsive to price increases. These models illustrate the need for a conservative approach in order to ensure competitive outcomes for customers because many customers lack one of the key protections against market power: demand response." Id. at P 103.

17. There is a systematic relationship among the various measures of market structure including the number of suppliers, market shares, HHI, elasticity and the Lerner index under Cournot competition or other models of competitive behavior that account for demand elasticity or strategic behavior. The HHI and the Lerner index levels decrease with the number of suppliers[6] (competition increases with more competitors) and a given level of elasticity. However, for a given number of suppliers, the HHI and the Lerner index levels do not change in response to changes in excess supply. For a given set of market structure characteristics, the Lerner index is a function of elasticity; the less elastic is demand the higher the markup over competitive price levels.

18. Analysis of the various measures of market structure show that the combination of factors that typically cause a failure of one-pivotal or two-pivotal supplier tests also result in failing the market share and/or HHI tests. The characteristics of markets that pass the three-pivotal supplier test correlate better with competitive levels of HHI and market share.

19. A one-pivotal supplier test by itself (meaning two jointly pivotal suppliers are considered competitive) is not an adequate market structure test because it rules out only the extreme case of structural market power (monopoly) in power markets with inelastic demand. When there is one pivotal supplier in a load pocket, it has the ability to unilaterally increase the price. Even when there are multiple suppliers in a load pocket, a single pivotal supplier has monopoly power at the margin. A single pivotal supplier is a monopolist facing a perfectly inelastic residual demand curve for a positive amount of output. This is an extreme case of local market power.

20. A two-pivotal supplier test (three jointly pivotal suppliers are considered competitive) is not an adequate market structure test, because markets that pass this test exhibit market structure conditions that fail the Commission market power tests including those measured by HHI and market share, show significant markups under Cournot

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[6] This assumes that all suppliers have identical cost characteristics.

competition and other models of competitive behavior, and result in market structures where various forms of unilateral or parallel behavior can result in prices significantly greater than the competitive level.

21. In a market that passes the two-pivotal supplier test but fails the three-pivotal supplier test, substantial market power may reasonably be expected in the case where there are multiple suppliers in the load pocket. A case that illustrates this situation is a load pocket where there are three suppliers, each with 1,000 MW of capacity, and load in the load pocket is 1,000 MW. In this case, the market would pass the two-pivotal suppliers test (there would be three equally sized suppliers available) but fail the three-pivotal suppliers test. However, suppliers would still have the ability to increase prices substantially above the competitive level based on the high level of concentration in the market. The lowest possible HHI in this market is 3333, assuming that all suppliers have equal marginal costs and each serves equal amounts of load. HHIs of 3333 and above fail the Commission's market power test and are generally considered inconsistent with a competitive market, even with relatively elastic demand. In this case, three suppliers are jointly pivotal. This market would appropriately fail the three-pivotal supplier test. If the test were relaxed to a two (or one) pivotal supplier test alone, then offer caps would be inappropriately lifted even in such highly concentrated load pockets.

22. A three-pivotal supplier test is the next possibility and it is considered the minimum acceptable test because it will tend to be associated with HHI levels within the reasonably competitive range, it will result in lower mark-ups under Cournot competition, and it will make parallel behavior more difficult. A market could, under certain circumstances, pass the three-pivotal supplier test but fail the Commission market power tests. A market with four equally sized suppliers could pass the three pivotal supplier test if there were adequate available supply in the market, but fail the AEP market power tests. This illustrates the point that the three-pivotal supplier test explicitly accounts for the relationship between supply and demand while the HHI and market share tests alone do not. The three-pivotal supplier test focuses on conditions at the margin in the market, which are most critical for participant behavior and market price performance in the context of hourly energy markets.

23. As an example of the three-pivotal supplier test in practice, PJM filed the Declaration of Joseph Bowring in Docket No. ER04-539-000.[7] That Declaration applied the three-pivotal supplier test to internal transmission interfaces in the PJM Region. The results demonstrated the points made here. The three internal PJM interfaces (Western, Central and Eastern interfaces) passed the three-pivotal supplier test despite failing the Commission market share test, and one additional interface (the APS South interface) also passed the three-pivotal supplier test despite failing the Commission market share test.

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[7]   Declaration of Joseph E. Bowring, Docket No. ER04-539-000 (Mar. 12, 2004).

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Response to Protests

24. The essential argument of all of the protests to the three-pivotal supplier test is that use of the three-pivotal supplier test means that offer capping for local market power will not be lifted until there is significant new entry by unaffiliated competitors or divestiture by existing participants that results in significant entry by unaffiliated competitors. That is exactly right and that is exactly the point. Current load pockets in PJM are characterized by a lack of competition. That was recognized in the initial market-based rate filing for PJM in 1997 and has been reflected in the PJM local market power mitigation rules in force since that time. If there is no change in the competitive structure of PJM load pockets, then there is no rational or reasonable basis for removing the offer capping rule. Creating a test that obfuscates this fact would be counterproductive. The three-pivotal supplier test is a clear test that can be applied by PJM in real time that will result in the removal of offer capping when competitive conditions warrant such removal but not before.[8]

25. The Electric Power Supply Association ("EPSA") provides a counter example[9] to an example HHI calculation provided in PJM's original declaration.[10] In EPSA's example, it is assumed that transmission import capability for a load pocket is 500 MW and that there are four generation owners each with 100 MW of capacity in the load pocket capable of relieving the constraint. When load exceeds the transmission import capability plus the capacity of one supplier, the area would fail PJM's market power test. EPSA takes issue with this result, claiming the HHI in this example would not be indicative of market power: "For example, if the load is 610 MW, the area is deemed non-competitive even though there are three suppliers (with a total 290 MW) remaining after all load is served, the HHI is only 1,111, and there is surplus capacity of 48%. Applying the no-three pivotal suppliers test, price signals in load pockets would likely be squelched." EPSA Affidavit at para. 20. EPSA does not explain how competitive behavior in the load pocket would lead to a price signal that differs from the price that results from the three-pivotal supplier test.

26. EPSA is mistaken and draws an erroneous conclusion regarding the competitiveness of the local market. Rather than an HHI of 1111, the example shows an HHI of 2500 within the pocket. EPSA fails to recognize that once the constraint is in place, the outside generation market, no matter how competitive, is no longer available as a

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[8]   PJM recognizes that certain other steps should be taken to provide incentives to generators to enter load pockets with new construction and it is planning to present a new capacity compensation structure, its "Reliability Pricing Model," to the Commission in the near future. One should not confuse the provision of appropriate compensation to provide incentives to generation construction with the equally important need to prevent the exercise of market power through offer capping in hourly energy markets. Both can readily be accomplished. Indeed, even currently, where the Commission deems units to be too frequently mitigated to recover their costs, it has allowed added compensation in the former of higher offers. See note 3, above.

[9]   Affidavit of Jonathan A. Lesser, PH.D. and Guillermo Israilevich, PH.D., Docket No. EL03-236-002 (Aug. 23, 2004), at para. 20 ("EPSA Affidavit").

[10]   Declaration of Joseph Bowring, Docket No. EL03-236-000 (Sep. 30, 2003), at para. 10 ("Bowring Declaration").

source of competitive constraint on behavior in the load pocket. The relevant market includes only the suppliers able to relieve the constraint and serve remaining load. In such a situation, the lowest possible HHI would be 2500, assuming that the four hypothetical generators have identical costs and share the peak in the pocket load equally, thus failing the Commission HHI test (HHI of 2500). In addition, each of the four hypothetical generators would have a market share of 25 percent, thus failing the Commission market power test (market share of 20 percent) directly as well as the three-pivotal supplier test. The situation would be worse from the perspective of the Commission market power tests if the generation owners were unequal in size. The situation would also be worse from the perspective of the Commission market power tests if the costs of the suppliers were not equal. The relevant market would be smaller and thus the market share, HHI and pivotal supplier results worse. EPSA also fails to explain exactly what the "price signal" would be in a competitive market and how it would be different than under the PJM test.

27. EPSA fails to properly account for the role of demand elasticity in assessing market power. Id. at para. 21. All structural tests for market power must address the low elasticity of demand. With a smaller load there is less likely to be diversity and thus the elasticity in load pockets created by constraints on the transmission system is likely to be even lower. Low elasticity of demand amplifies the likely outcomes when structural conditions for market power are present. Contrary to EPSA, when elasticity is low, the fact that elasticity varies along a linear demand curve is entirely consistent with Cournot theory and the associated Lerner index results. The basic fact, uncontested by EPSA, is that under any theory of market behavior, the less elastic the demand curve, the greater the deviations in price from the competitive level for a given level of HHI.

28. EPSA argues that price elasticity may emerge and that structural market power screens should account for this potential. EPSA asserts that wholesale buyers in wholesale power markets actually may (in the uncertain future and using unspecified methods) exhibit price responsiveness. To support this assertion, EPSA claims that the Bowring Declaration does not distinguish between wholesale market prices, and load serving entities' ("LSEs") ability to respond to those prices, and the prices that retail customers face and their ability to respond to those prices. Id. at para. 8. EPSA asserts, without empirical or theoretical support, that there is significant demand elasticity in local markets created by transmission constraints. EPSA simply asserts that LSEs, regardless of the behavior of actual retail load, can and will respond to price increases "in the longer run" and "using a variety of measures." EPSA's position thus recognizes the low elasticity of demand in wholesale power markets, but asserts that this will soon change. EPSA would have the Commission and the markets rely on speculative responses by LSEs at some uncertain time to limit real market power exercised in real time.[11]

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[11]   Finally, if at some point in the future, there is identified load in a load pocket that is price sensitive, that load can be explicitly incorporated in the three-pivotal supplier test.

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29. ESPA (id. at para. 23) asserts that the Bowring Declaration misapplies the HHI analysis. EPSA would calculate HHI based on total capacity rather than actual market clearing quantities for the relevant market. This is inconsistent with the theoretical basis for HHI and is also inconsistent with the calculation of HHI under the Commission's Delivered Price Test. Again, EPSA ignores the fact that the relevant market for analysis is the local market created when a transmission constraint is binding and can only be resolved by a defined set of units. EPSA also ignores the fact that, in the cited example, PJM is appropriately applying the HHI screens consistent with the Commission's Delivered Price Test for the relevant market.

30. EPSA contests this when they discuss the examples from the original Bowring Declaration. EPSA, for example, takes issue with the range of HHIs calculated in an example where three generators, each with 1000 MW of capacity, within a pocket with a 1000 MW load. Bowring Declaration at para. 16. As explained in the original example, the HHI in such a scenario can vary from 3333 to 10000, depending on the number of suppliers that actually, at the market-clearing price, supply load. If all three proportionally split the load at the market-clearing price, the HHI would be 3333. If only one can serve the load within a relevant price range, the relevant HHI is 10000. EPSA argues that the proper HHI should be 3333 regardless of the actual generator behavior at the market-clearing price. This is because EPSA argues, inconsistent with the theoretical basis for HHI, that HHI should be measured using total capacity. EPSA Affidavit at para. 23.

31. EPSA states that the Lerner Index example used in the Bowring Declaration suffers from a theoretical flaw and should not be relied on. EPSA's complaint that the Lerner index, derived from Cournot theory, does not behave well under conditions of inelastic demand is exactly the point. Id. at paras. 21-24. It is well understood that defined, profit maximizing equilibria in Cournot and related models requires that the market find an equilibrium point where a decrease in output is not fully compensated by an increase in price in the market, i.e., where the demand becomes elastic. Where demand is inelastic, there is no such point and, as EPSA point out, there is no discrete price solution. That is the point. There is a definable result however, and the result means that there is no limit to the price that can be charged in such a market. Therefore, under these conditions, market power must be mitigated by rule because competition cannot limit market power.[12]

32. EPSA asserts that the three-pivotal supplier test is too restrictive. Id. at para. 25. In its protest, EPSA provides some analyses of the relationship between surplus capacity and the number of suppliers needed to be jointly or individually pivotal. In so doing EPSA observed that, "[i]ntuitively, the lower the surplus capacity, the fewer suppliers will be required to be jointly pivotal, since in the limiting case of no surplus capacity whatsoever, any single supplier becomes pivotal." Id. at para. 34.

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[12]   Solving the Cournot equilibrium means finding a residual demand curve that is elastic for each supplier. That is not possible for a pivotal supplier and thus there is no limit to how high such a supplier can set the price.

33. Despite this intuition, EPSA mistakenly associates excess capacity with an absence of market power. EPSA argues that the existence of surplus capacity will tend to limit, all else held equal, the ability of a given set of suppliers to successfully manipulate price. Id. at paras. 33, 35. In particular, EPSA incorrectly assumes that excess capacity alone is an indicator of competitiveness at a given level of HHI. Excess capacity in a market, by itself, does not preclude the exercise of market power. A monopolist, for example, with 50 percent more capacity than is needed to meet demand is still a monopolist and will still charge monopoly prices. The existence of excess capacity does not limit the ability to exercise market power in cases with a small number of competitors and in fact excess capacity can be used to discourage entry with the threat of price reductions. The point is apparent in EPSA's Table 2, where as excess capacity increases for a fixed set of suppliers, the HHI remains unchanged. Id. at para. 34. New competitors are required for increased competition and not merely additional capacity owned by existing participants.

34. EPSA's discussion of the relationship among HHI, the number of pivotal suppliers and excess supply ignores demand elasticity and therefore ignores a key determinant of expected market outcomes. Id. at paras. 33-34. At any given level of market concentration, demand elasticity is a key determinant of the mark up that can be achieved. For a given level of elasticity, the only thing that introduces more competition is more competitors in the market. Increasing capacity among a fixed number of suppliers will not cause the HHI to decrease or result in reduced markups as measured by the Lerner index. Increases in capacity that result from an increase in the number of competitors will, however, reduce the HHI, reduce the Lerner index results, and improve the structural condition of the market as measured by the number of jointly pivotal suppliers.

35. EPSA argues that the three-pivotal supplier test is best suited to detect potential coordinated behavior. EPSA agrees that with no demand response and suppliers who can coordinate their behavior, the two-pivotal and three-pivotal supplier tests could be used to prevent suppliers from coordinating to withhold capacity in order to raise prices. But EPSA asserts that this problem is already addressed by the "close scrutiny and oversight of such behavior by the market monitor if prices are observed to rise precipitously" and by "the Commission's own Market Behavior Rules,[13] which explicitly and clearly prohibit collusion." Id. at para. 37.

36. EPSA's premise is incorrect. The Cournot analysis is a structural analysis with behavioral assumptions. The assumptions are explicitly not that there is collusion but that suppliers act unilaterally within a given market structure. EPSA's solution is to ignore the market structure issue in the hopes that if market power is exercised, the market monitor or the Commission will notice. The point of the structural test is to increase the probability of a competitive outcome and to minimize the need for intervention in the market. EPSA ignores the fact that, under the authority cited,

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[13] Investigation of Terms and Conditions of Public Utility Market-Based Rate Authorizations, 107 FERC 61,175 (2004).

neither the market monitor nor the Commission has the authority to address such a situation in real time, or anything close to real time. EPSA's proposal would introduce uncertainty into the market by resolving market power issues through litigated proceedings in place of clear <u>ex ante</u> tests grounded in the Commission's AEP market power analysis. EPSA's proposal would permit the exercise of market power until such proceedings were concluded.

37. EPSA asserts that scarcity exists in load pockets in PJM despite having no supporting evidence and despite PJM's evidence to the contrary. In effect, EPSA is trying to reargue the existence of local market power mitigation rather than the narrower issue of the appropriate market structure test.

38. Reliant[14] discusses the example from the Bowring Declaration of a load pocket with transmission import capability of 500 MW, 750 MW of peak load, and three owners of generation (200 MW, 100 MW, and 100 MW). Bowring Declaration at para. 9; Reliant Protest at p. 4. With respect to that example, "Reliant agrees that the potential to exercise market power exists because the owner of the 200 MW portfolio is a pivotal supplier and there is need for local offer caps as a mitigation tool." Reliant Protest at p. 4. The example load pocket fails the Commission market power tests (the HHI is 3750) and the three-pivotal supplier test.

39. Reliant then presents two divestiture examples, both of which hold the import capability constant and hold capacity within the load pocket constant at 400 MW, while allowing the number of suppliers that own the capacity to vary. In the first divestiture example, Reliant holds Supplier B's capacity constant (100MW), while determining the minimum number of equal sized suppliers that would have to be created out of Supplier A and Supplier C's total capacity (300 MW) to allow the market within the load pocket to pass the three-pivotal supplier test. Reliant determined that Company A and Company C would have to divest into a total of 12 equal sized (25 MW) companies (creating a total of 13 companies, from the original 3, in the pocket). The resulting market, presuming a proportional sharing of the load among the 13 companies, has an HHI of 1093. In the second divestiture example, Reliant determines the minimum number of firms of equal size that would be needed to allow the load pocket to pass the three-pivotal supplier test. Reliant determines that it would take eight firms of equal size in the pocket (each with 50 MW) to pass the no-three jointly pivotal supplier test. Such a divestiture would produce, assuming a proportional distribution of the load among the suppliers, an HHI of 1250.

40. Reliant's conclusions are not supported by either example. The calculations are only correct under the strong assumption that every supplier has identical marginal costs. In the absence of that assumption Reliant's HHI and pivotal supplier calculations are incorrect under the Delivered Price Test. Reliant also fails to recognize that the three-pivotal supplier test is failed only under high load conditions in the hypothetical load pocket. The hypothetical market in the first example continues to include a single supplier (supplier B) which is large compared to the other suppliers and large

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[14]   Protest of Reliant Energy, Inc., Docket No. EL03-236-002 (Aug. 06, 2004) ("Reliant Protest").

compared to the total excess supply in the load pocket, creating the pivotal supplier issue. There is also a pivotal supplier issue in the second example. Even under the strong assumption of equal marginal costs, Reliant's examples illustrate, contrary to their assertions, the important point that market power can be exercised in the hypothetical markets at peak load as high mark ups (Lerner index) over the competitive price would result, given inelastic demand.

41. Reliant provides a third example, where two new suppliers enter the market, each with 100 MW of capacity. The result is a total of five suppliers with a total 600 MW of capacity. Reliant suggests that this market should be considered competitive but notes: "Despite the new entrants, this load pocket would fail PJM's proposed rule because three suppliers are jointly pivotal." Id. at p. 7. Reliant fails to note that the market fails both the Commission's market power tests and the three-pivotal supplier test even under the strong assumption of identical marginal costs. With the new entry, the HHI of this market is 2222 and Supplier A's market share is 33 percent, even under the strong marginal cost assumption. The HHI and market shares would be higher in the absence of the marginal cost assumption.

42. Reliant provides a fourth example that it claims indicates that PJM's test "is needlessly more restrictive than the Commission's approved pivotal supplier screen and lacks reasonable justification." Id. at p. 8. In this example, Reliant presents a market with a 100 MW peak load and 20 equal-size suppliers, each with 5.8 MW of capacity. Id. This market, at peak, has 116 MW of capacity. Reliant indicates that this market would not pass the three-pivotal supplier test, whereas it would pass the Commission's market power tests.

43. Reliant's example correctly illustrates the relationship between the level of excess supply and the size distribution of generation ownership, but Reliant fails to draw the correct conclusion from the example. The absolute number of competitors is not relevant, at the margin, for determining whether a participant has market power. This is true for the Commission market power tests and for the three-pivotal supplier test. The hypothetical market would pass the three-pivotal supplier test if load were 98 MW. The hypothetical market would fail the one-pivotal supplier test, supported by Reliant, if the peak demand were 111 MW, despite the existence of 20 suppliers. This example illustrates that the pivotal supplier tests correctly identify situations when one or more suppliers are pivotal when the results of HHI analyses may not indicate a potential problem. This is consistent with the Commission's use of multiple market power tests under the Delivered Price Test approach and consistent with the three-pivotal supplier test.

44. In general, Reliant fails to recognize that the three-pivotal supplier test is applied on an hourly basis, and is failed only when the identified structural conditions exist. This means, in Reliant's example market with 20 small suppliers, if load in the pocket was anywhere in the range from 1 to 98 MW, the market would pass the three-pivotal supplier test.
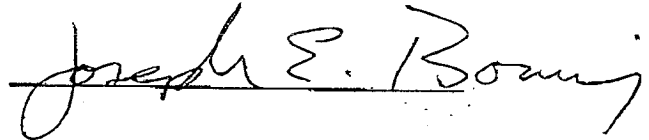
45. Reliant has also ignored the role that transmission upgrades play in improving the competitive structure of a market. Relatively small amounts of transmission upgrades built under PJM's economic planning protocol would, in this example, allow the market to pass the three-pivotal supplier test. For example, adding just 2 MW of transmission import capability would reduce the peak load in Reliant's example to 98 MW and the market would pass the three-pivotal supplier test, even at peak load.

46. Reliant proposes an alternative market power test. "Specifically, Reliant's proposed test would determine that a competitive market solution exists when at least three unaffiliated resources, with capacity available, submit bids to the ISO/RTO than can solve a circumstance of local congestion and no one bidder is essential to solving the congestion." Id. at p. 10. Reliant claims that if a market solution exists that meets these criteria, "no mitigation is necessary and suspension of offer caps is warranted." Id. . Reliant's test is simply the one-pivotal supplier test discussed above but without the additional factors included in the Commission's Delivered Price Test.

47. To illustrate the application of its market power test, Reliant provides two additional examples based on the load pocket with three owners with supply portfolios of 200 MW (Supplier A), 100 MW (Supplier B), and 100 MW (Supplier C), transmission import capability of 500 MW and peak load of 750 MW. In its first example, Reliant claims that under its test, "a competitive outcome could be attained if the largest supplier, Supplier A, sold 75 MWs of its 200 MW portfolio to a new supplier." Id. at p. 12. The new market for supply would be Supplier A – 125 MW, Supplier B – 100 MW, Supplier C – 100 MW, and Supplier D – 75 MW. However, this market structure is not competitive under the Commission's market power tests, even under the strong assumption of identical marginal costs, or the three-pivotal supplier test. The HHI is 2578, supplier A has 31% of the load and suppliers B and C each have 25% of the load.

48. In its second example, Reliant returns to the case where two independently owned 100 MW units enter the market. Id. at pp. 12-13. As a result of new entry, the supply in the load pocket is as follows: Supplier A – 200 MW, Supplier B – 100 MW, Supplier C – 100 MW, Supplier D – 100 MW, Supplier E – 100 MW. Reliant indicates that at peak demand, the three- pivotal supplier test would be failed. Id. Based on its test, Reliant claims that in this market structure, "competitive forces are adequate in the load pocket." Id. at 13. However, the market structure again fails the Commission's market power test, even under the strong assumption of identical marginal costs, and the three-pivotal supplier test. The HHI is 2222 and Supplier A's market share is 33.3 percent.

49. Reliant's examples make some important points, despite the conclusions drawn by Reliant. Adding more competitors to a market, either via entry or the building of transmission, is the best way to improve the structural competitiveness of a market. It is much more difficult to create a competitive market structure by adding more capacity to a given set of competitors. Similarly, dividing a fixed amount of capacity in a market among more suppliers will affect the HHI results more significantly than

it will affect the pivotal supplier results. Finally, the examples illustrate that there is a systematic relationship among the size distribution of suppliers, the amount of excess capacity and the measures of market structure.

50. As an example of the impact of adding competitors, if, in addition to the two 100 MW entrants in the final Reliant example above, a third 50 MW entrant was introduced, the HHI would fall to 1952, with market shares ranging from 7 percent to 30 percent. This market would fail the Commission's market power tests but it would pass the three-pivotal supplier test.

51. As another example, if, in addition to the two 100 MW entrants, Supplier A divested and split its capacity into two companies, the HHI would be 1667 and all market shares would be 16.7%. This market would pass Commission's market power screens and the three-pivotal supplier test.

I declare under penalty of perjury that the foregoing is true and correct.

Executed this 4th day of March 2005.

Joseph E. Bowring

Attachment 2

Notice of Filing

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

PJM Interconnection, L.L.C.   Docket No. EL03-236-00_

NOTICE OF COMPLIANCE FILING

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        In compliance with the Federal Energy Regulatory Commission's ("Commission") order in PJM Interconnection, L.L.C., 110 FERC ¶ 61,053 (2005) ("Rehearing Order"), take notice that on March 4, 2005, PJM Interconnection, L.L.C. ("PJM") submitted a declaration of the PJM Market Monitor addressing the three-pivotal supplier test PJM has established and the Commission has accepted as a trigger for suspending offer capping.

        Copies of the filing were served upon all PJM members, each entity designated on the official service list complied by the Secretary in this proceeding, and each state electric utility regulatory commission in the PJM region.

        Any person desiring to intervene or to protest this filing must file in accordance with Rules 211 and 214 of the Commission's Rules of Practice and Procedure (18 CFR 385.211 and 385.214). Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a notice of intervention or motion to intervene, as appropriate. Such notices, motions, or protests must be filed on or before the comment date. Anyone filing a motion to intervene or protest must serve a copy of that document on the Applicant. On or before the comment date, it is not necessary to serve motions to intervene or protests on persons other than the Applicant.

        The Commission encourages electronic submission of protests and interventions in lieu of paper using the "eFiling" link at http://www.ferc.gov. Persons unable to file electronically should submit an original and 14 copies of the protest or intervention to the Federal Energy Regulatory Commission, 888 First Street, N.E., Washington, D.C. 20426.

        This filing is accessible on-line at http://www.ferc.gov, using the "eLibrary" link and is available for review in the Commission's Public Reference Room in Washington, D.C. There is an "eSubscription" link on the web site that enables subscribers to receive email notification when a document is added to a subscribed docket(s). For assistance with any FERC Online service, please email FERCOnlineSupport@ferc.gov, or call (866) 208-3676 (toll free). For TTY, call (202) 502-8659.

Comment Date: 5:00 pm Eastern Time on (insert date).

Magalie R. Salas
Secretary