ATTACHMENT VI

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

New York Independent System Operator, Inc.	)	Docket No. ER01-3155-000
	)	
Consolidated Edison Company of New York, Inc.	)	Docket Nos. ER01-1385-001 and EL01-45-001
	)	
	)	

AFFIDAVIT OF DAVID B. PATTON, PH.D.

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OUTLINE

I. Introduction and Qualifications

1. My name is David B. Patton. I am an economist and President of Potomac Economics. Our offices are located at 4029 Ridge Top Road, Fairfax, VA 22030. Potomac Economics is a firm specializing in expert economic analysis and consulting.

2. I currently serve as the Independent Market Advisor for the New York ISO ("NYISO") and ISO New England, Inc ("ISO-NE"). In these matters, I am responsible for assessing the competitive performance of the market, including assisting in the implementation of a monitoring plan to identify and remedy market design flaws and abuses of market power. In this capacity, I provide recommendations to the NYISO regarding the market mitigation measures and other market rules.

3. I have worked as an energy economist for thirteen years, focusing primarily on the electric utility and natural gas industries. I have provided strategic advice, analysis, and expert testimony in the areas of electric power industry restructuring, pricing, mergers, and market power. I have also advised other existing and prospective RTOs on transmission pricing, market design, and congestion management issues. With regard to competitive analysis, I have provided expert testimony and analysis regarding market power issues in a number of mergers and market-based pricing cases before the Federal Energy Regulatory Commission, state regulatory commissions, and the U.S. Department of Justice.

4. Prior to my experience as a consultant, I served as a Senior Economist in the Office of Economic Policy at the Federal Energy Regulatory Commission ("Commission"), advising the Commission on a variety of policy issues including transmission pricing and open-access policies and electric utility mergers. Before joining the Commission, I worked as an economist for the U.S. Department of Energy. During this time, I helped to develop and analyze policies related to investment in oil and gas exploration, electric utility demand side management, residential and commercial energy efficiency, and the deployment of new energy

technologies. This work included the development of policies in former President Bush's National Energy Strategy and the Energy Policy Act of 1992.

5. I hold a Ph.D. in Economics and a M.A. in Economics from George Mason University, and a B.A. in Economics with a minor in Mathematics from New Mexico State University.

II. Purpose and Summary

6. The purpose of this affidavit is to provide an assessment of the New York ISO's market mitigation measures ("MMM") as modified by the Comprehensive Mitigation Filing. This assessment will include an overall discussion of the mitigation structure and supporting analyses of certain key elements of the mitigation plan.

7. I have participated with the NYISO and its market participants in the development of these revised measures, which are intended to apply a common framework in addressing all potential market power issues within New York. This framework expands upon the current market mitigation measures, adapting those measures to address locational market power within NYC and making a number of other revisions to improve the efficacy of the measures.

8. The approach employed in the current mitigation measures that will be applied to all market power issues relies primarily on a two-part test to determine when mitigation may be warranted. The first test identifies whether the owner or operator of an electric facility is engaging in conduct that may warrant mitigation.

9. The second test determines whether the identified conduct is having or will have a significant effect on the market outcomes. The application of these tests allows the mitigation measures to be much more focused than other approaches, minimizing unwarranted intervention in the market by the ISO.

10. The primary change proposed for adapting the current mitigation measures to address the locational market power issues within NYC is the use of lower conduct

and impact thresholds that vary depending on the frequency of congestion. These lower thresholds appropriately recognize the higher potential exposure of the market in these constrained areas to market power relative to the rest of the market.

11. The other changes to the current mitigation measures include:
    - Adding thresholds for monitoring and mitigation of non-price bid parameters. These parameters are important because, like the bid price, they can be used to withhold resources from the market.
    - Implementing refinements to the automated mitigation procedure ("AMP") for the day-ahead market. These refinements will improve the focus and effectiveness of the AMP.
    - Eliminating quantity thresholds for physical withholding within NYC. Like the lower thresholds for economic withholding described above, this change will allow the MMM to better address the locational market power issues within NYC. The conduct and impact tests would still need to be met before mitigation would apply.
    - Implementing a limited exemption from mitigation for new generating capacity accomplished by raising the competitive benchmarks against which the resources' bids are compared for a specified period of time. This change recognizes the competitive benefits that new generators provide to the system and is designed to ensure that the mitigation measures do not provide a disincentive to new investment.

12. As described above, the most significant change to the MMM is the application of the conduct-impact framework with lower thresholds to the constrained areas within and including NYC. This framework will replace the ConEd in-city mitigation measures that were developed and implemented at the time when ConEd divested its in-city generating resources. This new structure will only be implemented by this summer in the real-time market.

13. However, resource limitations preclude implementing this structure in the day-ahead market for NYC by this summer. Thus, the ConEd in-city measures continue to be used with some modifications until the conduct-impact framework can be implemented. While I support these proposed modifications to the ConEd measures as a transitional step, they are not discussed in this affidavit. The supporting analysis for these modifications, along with a summary of the ConEd mitigation that occurred during 2001, is set forth in the affidavit of Dr. James Savitt.

III. The Mitigation Framework

14. The Comprehensive Mitigation Filing proposes a unified structure for the application of market power mitigation. This structure addresses both supply and demand-side bidding strategies, employing a two-part test to determine when mitigation is warranted. The first part of the two-part test screens the bids of market participants to identify conduct that may warrant mitigation. The conduct test is a key for differentiating between scarcity and market power for purposes of mitigation (i.e., if suppliers are not withholding physically or economically, the price increases are the result of scarcity rather than market power).

15. The second part of the test evaluates whether the market impact is significant enough to justify mitigation. This conduct-impact framework minimizes intervention in the market by ensuring that evidence of substantial market power exists before mitigation is imposed. Like the conduct test, the impact test also allows the mitigation to be imposed in response to market power rather than scarcity. When the system is in shortage and prices are set at scarcity levels, most conduct that would be identified as economic withholding will not have a significant impact on market prices and would, therefore, not be mitigated. (e.g., when the spot price is $1000 per MWh due to shortage, generators raising their bids to relatively high levels, but less than $1000, will generally have no impact on the market price).

16. The conduct and impact tests should only be met when market power exists and is exercised. Therefore, structural improvements that mitigate the market power concerns will cause the conduct and impact thresholds will no longer be exceeded and mitigation will stop occurring. In this sense, the mitigation linked to the conduct and impact tests will naturally sunset if and when market power ceases to be a significant concern. The following sections describe in detail how the conduct-impact approach is applied to economic withholding, physical withholding, virtual bidding in the day-ahead market, and load bidding.

A. The Conduct Test

17. The first application of the conduct test is to economic withholding. Economic withholding occurs when the bid for a resource is raised to reduce its output and raise the market price above competitive levels. To screen the participants' conduct for economic withholding, the current bids are compared to a competitive benchmark. Under the NYISO's location-specific market clearing prices, the competitive bid for a generator is its short-run marginal cost (the total incremental cost of producing additional output, including opportunity costs). This is true because, absent market power, a supplier will maximize its profit by continuing to increase its output until the cost of producing more (i.e., its marginal cost) is higher than the market clearing price.

18. Some economists utilize estimates of variable production costs to serve as a proxy for short-run marginal costs. This approach fails to recognize several factors that can cause short-run marginal costs to exceed variable costs. For example, generating resources that can run in a limited number of hours should include lost profits from other hours (i.e., opportunity costs) in their bids.

19. Hence, the NYISO computes reference levels based upon a generator's accepted bids during competitive periods over the previous 90 days to serve as a competitive benchmark for the unit. The theory under this approach is that the competitive conditions that prevail in most hours provide a strong incentive for suppliers to bid their marginal costs. Thus, past accepted bids should be a superior benchmark for a unit's marginal costs.

20. These reference levels vary over the output range of each unit and are computed for all elements of a generator's bid, including start-up cost, minimum generation cost, and the physical parameters governing the operation of the unit. To ensure that the accepted bids occurred under competitive conditions, the bids accepted from units in load pockets are excluded when congestion exists into the load pocket.

21. For those resources that do not have adequate accepted bids to determine a bid-based reference level, the filing makes clear that an estimate of variable cost will be

used as a starting point for determining a default reference level for these resources, in consultation with the owner or operator of the resource. However, this estimate may be adjusted for factors that may cause marginal costs to diverge from variable costs.

22. To identify economic withholding that may warrant mitigation, the current bid for each unit is compared to these reference level benchmarks – those that exceed the reference level by more than a specified threshold are identified. Exceeding the applicable threshold does not necessarily mean that the owner of the unit is attempting to exercise market power. There are many justifiable reasons why an owner may raise the bid for its unit, most of which involve factors that cause the marginal cost of the unit to increase. These could include intertemporal opportunity costs caused by run-time restrictions, operational risks, short-term fluctuations in fuel costs or availability, or other factors. For this reason, the conduct screen can sometimes identify conduct that is justifiable.

23. The mitigation structure addresses this risk in three ways. First, it requires that the conduct have a material impact on the market before any mitigation is imposed. In most cases, economic withholding will have little, if any, impact on market prices because most resources are bidding against other resources with very similar costs (i.e., the supply curve is flat). In these circumstances, withholding will simply result in substitution of other units at similar prices.

24. Second, the thresholds are set at relatively high levels -- the default threshold level for New York is the lower of a 300 percent or $100 per MWh increase in bid price over the reference level. This is large enough to cover most of the factors that would justifiably cause a unit owner to raise its bid prices. In addition, the MMU monitors for economic withholding at lower threshold levels and has the authority to make a Section 205 filing with FERC to mitigate in the event that an exercise of market power is detected at these levels.

25. Based on our experience monitoring the New York market over the past two years, the higher threshold levels used to evaluate and impose mitigation measures are

appropriate. To make this assessment, I have screened bids at lower thresholds (the lower of 100 percent or $50 per MWh) to determine whether large quantities of economic withholding may be occurring at lower threshold levels that could be affecting prices.

26. I have analyzed the day-ahead bids detected at the lower threshold levels to identify those that could have significantly affected market prices. To affect prices, the bid price must be equal to or higher than the LBMP and the reference level must be lower than the LBMP by at least the threshold amounts. Using these screens, the average quantities of economic withholding occurring at the lower threshold levels are shown in the following table.

Average Day-Ahead Bid Quantities Exceeding Lower Conduct Thresholds: Screened for Potential Impact
January 2001 to December 2001

	Average Quantities Identified (MW)		
	All Types	Non-Hydro Units	Hydro Units
All Locations	**66**	**57**	**9**
East of Central East	51	51	0
West of Central East	15	6	9

Source: NYISO day-ahead bid data.

27. These results show that there are not generally significant quantities of economic withholding that would warrant mitigation at lower threshold levels.

28. Third, under the current MMM the NYISO will generally consult with a participant prior to imposing a mitigation measure to seek an explanation for the conduct detected. If the explanation provides a competitive justification for the conduct then it is not mitigated. Likewise, owners may request adjustments in their reference level to address factors that justifiably compel an increase in bid prices. These adjustments would prevent a unit from failing the conduct test and are particularly useful in the context of the automated mitigation procedures.

29. In general, conditions under which market power may be exercised occur relatively infrequently. Therefore, utilizing relatively large thresholds for performing the conduct test is beneficial to the extent it prevents justifiable changes in bid prices from exceeding the conduct screen. However, if the conditions under which a supplier may have the ability to withhold resources to raise prices occur frequently (e.g., in a load pocket where transmission constraints are often binding), then large thresholds can allow substantial harm to consumers to be generated by lower levels of economic withholding. For this reason, the comprehensive mitigation measures propose thresholds for transmission constrained load pockets that decrease as the frequency of the transmission constraints increase.[1]

30. The conduct test for physical withholding generally involves evaluating the physical capability to provide energy or other electricity products, such as operating reserves. Physical withholding is defined as not offering the output of a resource when it would be economic to do so. This may be accomplished by providing false information regarding the capability of the resource or simply refusing to offer the output of the resource.

31. Physical withholding also includes not offering a resource in the Day-Ahead energy and ancillary services markets, whether or not the resource has been sold in the ICAP market. Only ICAP resources are required to bid in the Day-Ahead market for system reliability. For purposes of market power, however, refusals to offer a resource in the Day-Ahead market when it is economic to run the unit is physical withholding by definition. In most cases, such withholding does not have a significant impact on market prices. When it does affect prices significantly, however, mitigation is warranted whether or not the withheld unit has an ICAP obligation.

32. To facilitate identification of physical withholding, New York's market monitoring plan allows the NYISO to collect generator logs and other information that would allow it to determine when a generating resource is being physically withheld.

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[1] I discuss the application of this approach to locational market power problems in New York City in Section IV of this affidavit.

33. The MMM also contain quantity thresholds below which a supplier will not be subject to mitigation for physical withholding. These thresholds are the lower of 10 percent or 100 MW of a unit's capability, or the lower of 5 percent or 200 MW of a bidding entity's total capability. Since lower quantities of withholding may significantly raise prices in transmission constrained areas, the comprehensive filing proposes eliminating the quantity thresholds for resources located within New York City ("NYC"). This is comparable to the treatment of economic withholding, for which there are no quantity thresholds.

34. In addition to energy and ancillary services bids, the NYISO monitors load bidding and virtual bidding in the Day-Ahead market. There are no reference levels for virtual bids since they are not related to physical resources. Instead, the NYISO seeks to identify sustained non-economic conduct – purchases or sales that promote divergence between the Day-Ahead and Real-Time markets.

35. These conduct tests are the first part of the two-part test. If they are exceeded, an impact test is applied to determine whether mitigation is warranted.

B. The Impact Test

36. The impact test is a critical component of the mitigation structure. Some suppliers become pivotal or otherwise have the ability to influence prices under specific market conditions, such as when constraints are binding into a local area served by the supplier. A supplier is pivotal when its resources must be used to satisfy the market demand. However, outside of constrained areas, suppliers rarely have significant market power as discussed above. The impact test prevents mitigation in circumstances where some portion of a supplier's resources exceeds the conduct threshold, but has little impact on market prices.

37. The impact test also effectively serves as a structural screen, which the FERC directed the NYISO to consider in its mitigation order dated November 27, 2001. This is true because the market impact test should only be exceeded when structural conditions have arisen that would allow suppliers to raise prices by withholding resources. In fact, the market impact test is more accurate than any structural screen

because it directly measures the impact of withholding rather than relying on a market structure screen to provide indirect evidence supporting an inference that mitigation is warranted.

38. Some mitigation measures are triggered only by the presence of transmission congestion that may isolate a load pocket within an RTO region. This may be considered a "structural" trigger, but is not necessarily an accurate indicator of the presence of market power. For example, when constraints are binding into New York City under relatively low load conditions, the suppliers in the city are not likely to have the ability to significantly raise prices. In contrast, constraints that occur under high load conditions may make one or more suppliers pivotal -- giving them a substantial ability to raise prices. The impact test effectively differentiates between these two conditions.

39. Like the conduct test, the impact test generally employs a relatively large threshold to determine when mitigation is warranted – the lower of a 200 percent or $100 per MWh increase in prices or guarantee payments. As I stated in paragraph 29 concerning the conduct, lower thresholds are justified when locational market power associated with frequently occurring transmission congestion is present. Therefore, the comprehensive filing proposes market impact thresholds for NYC and the load pockets it contains that are the same as the conduct thresholds – both in amount, and in decreasing as the frequency of binding constraints increases.

40. The market impact test for load bidding and virtual bidding in the Day-Ahead market is based on the average price difference between the Day-Ahead and real-time markets over a rolling 4 week period. Such a period is necessary because these types of bids are subject to substantial uncertainty and a single incident in isolation does not establish the presence of market power.

IV. Mitigation of Locational Market Power

A. Reduced Thresholds for Load Pockets

41. The Comprehensive Mitigation Filing includes provisions to apply the conduct-impact framework to address locational market power. These provisions will initially apply to NYC and the load pockets within the city, but could be applied elsewhere if transmission constraints emerge that create locational market power. In applying these provisions to NYC, the conduct-impact framework will replace the current ConEd In-City mitigation measures. For practical reasons relating to the development of the necessary software and other implementation requirements, the provisions will first be applied to the real-time market for the summer 2002 and will later be applied to the day-ahead market.

42. As I describe in detail below, the comprehensive filing proposes lower conduct and impact thresholds to be applied to the NYC area and the load pockets within NYC.[2] These lower thresholds are justified by the increased exposure of the market in these areas to locational market power. The locational market power that is created when transmission constraints isolate these areas of the system is related only in part to the market concentration in these areas.

43. Market concentration is generally measured using the Herfindahl-Hirschman Index ("HHI"), which is computed by summing the square of each supplier's market share. Using this statistic, the market concentration in the seven load pockets within the 138 kv system in NYC that the NYISO will be modeling in the real-time market ranges from 3700 to 10000. These values are calculated assuming the constraint is binding into the sub load pocket and represent the concentration of supply that may serve the demand in the sub pocket that is not served by imports. The antitrust agencies and the FERC both generally define markets with HHI values greater than 1800 as highly concentrated for purposes of evaluating the competitive effects of mergers. While some markets with HHI values of 1800 may be considered

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[2] I have not recommended applying these thresholds to Long Island at this point. Even though congestion can sometimes isolate it, the fact that load and generating output on Long Island are both owned by the Long Island Power Authority minimizes its incentive to raise prices.

workably competitive, HHIs of 3700 and above would be considered excessively concentrated by virtually any standard.

44. The foregoing values are intended to reflect the market conditions when constraints are binding into the load pocket and load in the area must be served by the internal suppliers. Therefore, they only include the internal supply within each load pocket. Although adjustments could be made to attempt to account for other factors, HHI statistics only address the supply side of the market and can be a misleading indicator of competitive conditions. With that caveat, the HHI evidence does indicate that tighter mitigation standards are warranted in New York City.

45. Locational market power is created when transmission congestion into some area of the network gives a supplier the ability to withhold resources and raise prices within the area. The most extreme form of locational market power is "must-run" market power. This occurs when the load is high enough in the constrained area that one or more internal suppliers become pivotal (i.e., the supplier's resources must run to satisfy the demand in the area).

46. In this case, the pivotal supplier is a monopolist over the residual demand that is not served by imports or the other suppliers. In the LMP market, the bid of the pivotal supplier will set the spot energy price throughout the constrained area. In a number of load pockets, the baseload steam units are owned by one supplier while the peaking units are owned by a second supplier. The steam units will often be operating at full output given their production costs, leaving no alternative suppliers available to compete with the owner of the peaking units when these units are needed to serve growing load in the load pocket.

47. I have assessed the extent to which one or more suppliers in NYC is pivotal given the actual hourly load levels and the import capability into NYC from all sources. This analysis is substantially similar to the Supply Margin Assessment ("SMA") screen introduced by FERC. Normally, one should account for the load obligations of the supplier in determining whether the supplier has an incentive to exercise

market power. Since the largest suppliers in NYC have no load obligation, this was unnecessary for this analysis.

48. I conducted the analysis on an hourly basis for all of 2001. The analysis included two scenarios with alternative assumptions regarding the import capability. The first case used the average ratings on the interfaces into NYC from eastern New York, New Jersey, and Long Island. I found that one or more suppliers were pivotal in 2 percent of the hours during 2001.

49. The second scenario used the average total imports into NYC from all directions in hours when the price in New York City is at least $5 per MWh higher than prices in eastern New York or Long Island (indicating that constraints are binding into NYC). This results in an assumed import capability into NYC that is 400 to 600 MW less than the capability assumed in the first scenario, and raises the portion of hours in which at least one supplier is pivotal to 6 percent of the hours in 2001.

50. It is useful to note that constraints into NYC were binding in approximately 8 percent of the hours during 2001. Hence, suppliers can not always be pivotal when the constraints into NYC are binding. Nevertheless, the results of the pivotal supplier analysis are significant. For example, if suppliers were actually pivotal in 4 percent of the hours of the year and were able to raise prices to the $1000 bid cap, the average price for the year would increase by close to 70 percent.

51. I was not able to do this analysis for the sub load pockets within NYC because the load data corresponding to the sub load pockets were not available. However, suppliers within the sub load pockets are likely to be pivotal in a higher portion of the hours since the resources within the load pockets are more highly concentrated and the constraints into these areas are binding much more often.

52. This analysis does not account for the fact that locational market power is not limited to must-run situations. For example, market power concerns can arise in cases where only two suppliers are available to meet the residual demand in the market. In these cases, the two suppliers may rationally engage in conduct that

together serves to increase prices. Hence, I analyzed the two cases described above to determine portion of hours in which the largest two suppliers within NYC are pivotal.

53. The results of this analysis show that the two largest suppliers are pivotal in 23 percent of the hours in the first scenario, and 39 percent in the second. This does not mean that market power is a significant issue in all of these hours, but does suggest that market power may be present in a significant number of hours. Moreover, it is important to note that this analysis is of the entire NYC area and the smaller load pockets are likely to exhibit more severe market power concerns when isolated by binding transmission constraints. In sum, these analyses together justify the specialized mitigation thresholds proposed in this filing for transmission constrained areas.

54. The primary difference between the general mitigation measures and the locational market power mitigation measures is that the locational measures utilize conduct and impact thresholds that are lower, and that vary depending on the frequency of the transmission constraints. As described above, the thresholds employed in the conduct-impact structure provide significant benefits in minimizing and focusing mitigation actions on the conduct that is most likely to constitute a substantial abuse of market power. This is true both of the general thresholds, and the proposed lower, location-specific thresholds.

55. As noted above for the broader market, the market conditions under which market power may be exercised generally occur relatively infrequently. However, this is not necessarily the case for locational market power caused by transmission constraints. These constraints can isolate narrow areas and cause one or more suppliers within the constrained areas to be pivotal. In some cases, suppliers within these constrained areas may have the ability to withhold supplies to cause the constraints to bind more frequently. Therefore, application of the relatively large statewide threshold that would allow moderate price increases in many hours could impose significant and non-competitive price increases on the market.

56. Therefore, the mitigation measures are designed to address locational market power by employing thresholds that decline as the frequency of transmission congestion increases. One reasonable method to establish the relationship between the thresholds and the frequency of congestion is to estimate the total economic value of the thresholds.

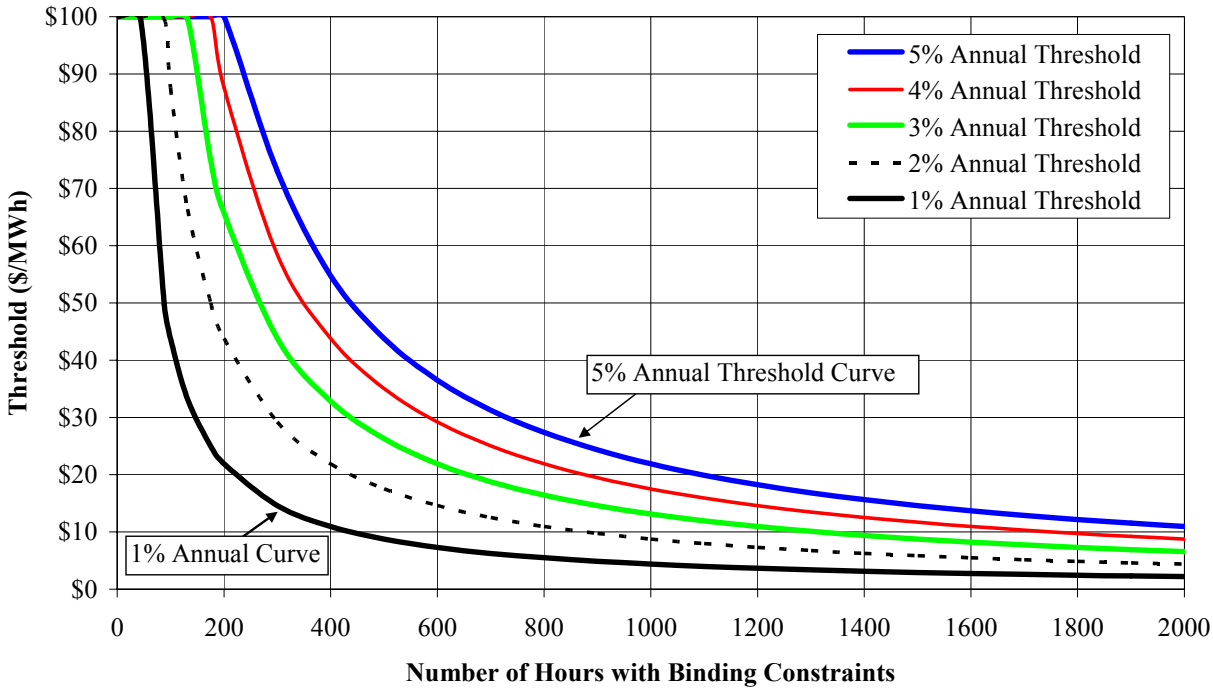
57. More precisely, the threshold amount is multiplied by the number of constrained hours. This amount is the maximum increase in payments per MW that would be made if the price increased by the threshold amount in each constrained hour. By dividing this value by the value of power for the entire year (i.e., the average price within the constrained area multiplied by the total hours during the year, 8760 hours), the annual economic value of the threshold can be shown as a percent of the price of power in the constrained area. This is shown in the following formulas:

$$\frac{\text{Threshold} * \text{Constrained Hours}}{8760 \text{ Hours} * \text{Average Price}} = \text{Max \% Value of Threshold} \quad \textbf{OR} \quad \text{Threshold} = \frac{\text{Max \%} * \text{Avg. Price} * 8760}{\text{Constrained Hours}}$$

58. This value would equal the percent by which a pure monopolist could theoretically raise prices in the load pocket during constrained hours without being mitigated. Of course, this overstates the true exposure of the market to market power since the suppliers within the constrained areas do not have perfect monopoly market power. Nevertheless, it does provide a reasonable basis for establishing thresholds for the load pockets. Using an average load-weighted price for 2001 in New York City of $49 per MWh, the following chart shows the thresholds for the load pockets that would result for annual threshold values ranging from 1 percent to 5 percent.

59. It is important to note that the average price that would actually be used to set these thresholds would vary from load pocket to load pocket. Since out-of-merit generation calls were used to manage the 138 kv interface and the sub load pockets on the 138 kv system, the energy prices in those areas were lower historically than they would be had the interfaces been modeled by the NYISO. Therefore, the tariff allows for an adjustment to be made to the average price that would be used to establish the threshold value in these load pockets.

Figure 1
In-City Conduct and Impact Thresholds
Alternative Scenarios



60. As the figure shows, when the number of hours in which a constraint is binding rises (raising the total exposure of the market to locational market power), the conduct and impact thresholds would be reduced to limit the overall exposure of the market to locational market power (e.g., the figure shows that the thresholds would be less than $10 if congestion occurs in 2000 hours per year). Alternatively, when the number of hours in which a constraint is binding becomes relatively small, the thresholds would re-join thresholds for the rest of the market at $100 per MWh. In addition, the higher state-wide thresholds would also apply in hours when constraints are not binding.

61. I recommend a 2 percent annual threshold as an appropriate balance between allowing justifiable fluctuations in bids versus protecting the market from unjustifiable exercises of market power. As described above, this 2 percent annual level represents the maximum possible price increase that could be sustained on an

annual basis if locational market power were perfectly exercised to raise prices in the constrained area by the threshold level in each hour that the constraint is binding. However, the 2 percent level is not the expected value of locational market power, nor is it in any way an endorsement of market power that may be exercised under the threshold level.

62. In fact, the actual potential exercise of locational market power should be well below this level because suppliers do not always have market power when the constraints are binding and may not be able to accurately predict the congestion. Therefore, this level is conservative, particularly when considered in comparison to the 5 percent price increase threshold that the Commission and the Antitrust Agencies have used in the competitive analysis of mergers. To estimate the actual exposure of the market to locational market power, one must examine the historical data regarding congestion entering NYC and entering each of the load pockets within the city.

63. The load pockets are nested within one another at three levels. The first level (the largest) encompasses the entire NYC area with the transmission facilities entering the city at the 345 kv voltage level. The second level is the 138 kv load pocket, which includes most of the generation within the city with the exception of 6 units that are interconnected with the 345 kv system. The third level includes seven other sub load pockets, six of which are located within the 138 kv load pocket and one that is on the 345 kv system.[3]

64. In establishing thresholds that are directly related to the frequency of congestion, one must account for the fact that the constraints into the various load pockets may be binding in simultaneous hours or in independent hours. When constraints for the various load pockets occur in independent hours and no other provisions are made, the total exposure to market power may exceed the 2 percent level. This is in part why the conservative recommendation of a 2 percent annual level is reasonable.

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[3] For purposes of the discussion in this affidavit, I will generally refer to the sub load pockets as being located on the 138 kv system.

65. One provision intended to address the potential additive nature of the exposure to locational market power is that the constraints binding at broader levels would count in establishing the threshold values for the narrower load pockets. For example, if the constraint into the 138 kv load pocket were binding 1000 hours per year and the constraint into a smaller load pocket within the 138 kv system were binding an additional 100 hours per year, the threshold for the smaller load pocket would be determined based on a congestion frequency of 1100 hours. Thus, the determination of the thresholds for the load pockets would also be additive.

66. This provision helps to ensure that the overall exposure of the market to locational market power is limited by preventing a supplier within the smaller load pocket from independently raising prices by 2 percent at more than one load pocket level.

67. The following sections estimate the frequency of congestion into these load pockets.

B. Historical Transmission Constraints into the NYC Load Pockets

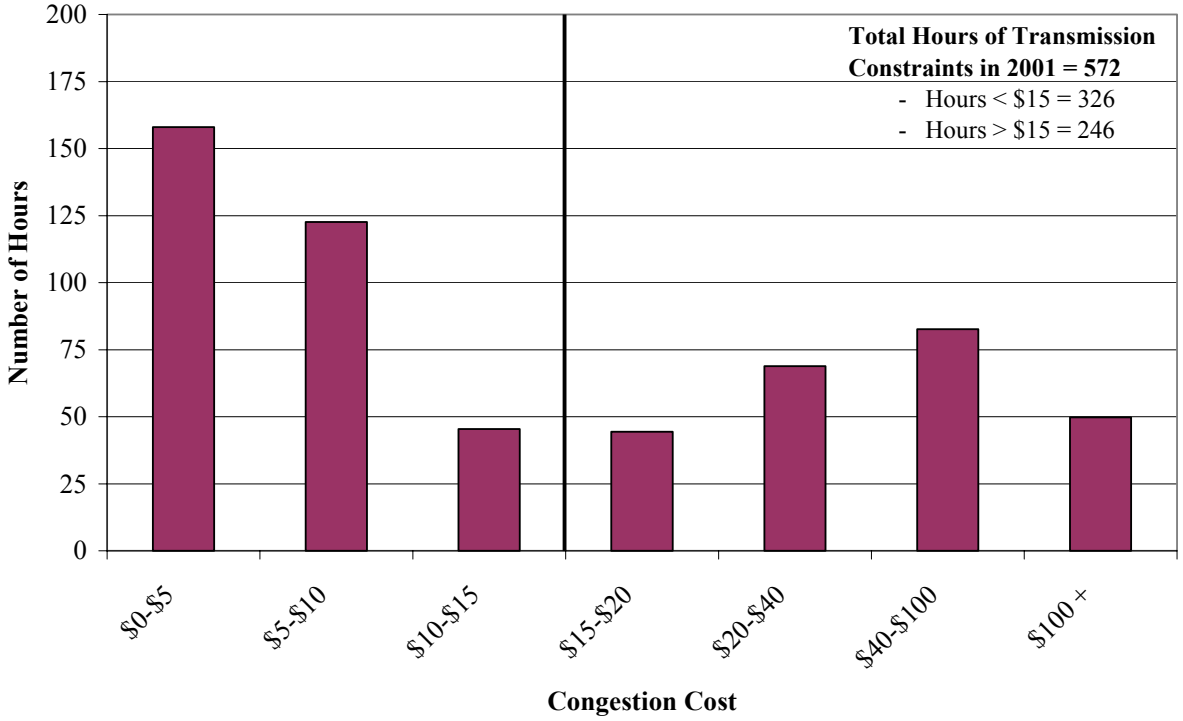
68. The first constraint analyzed is on the transmission interface into NYC, which is currently included in the SCD model. Because this constraint is modeled, the economic effects of the constraint are reflected in the LBMPs. In addition, the model computes a "shadow price" for the constraint that represents the economic value of the constraint (i.e., the total net benefit to the system of increasing the limit on the interface by one unit).

69. Due to the configuration of the system, the shadow price for the interface entering NYC should approximately equal the difference between the LBMPs within and outside of the city. For example, an hour with LBMPs inside NYC of $40 and outside of NYC of $30 should exhibit a shadow price of $10 because relieving the constraint by 1 MW would allow the substitution of 1 MW of $30 energy for the more expensive $40 marginal energy within NYC – a savings of $10. A shadow price greater than zero simply indicates that the constraint is binding – it does not indicate that market power is being exercised. However, if suppliers within the constrained area are withholding to raise prices in the area, the price impact of this conduct can be presumed to be no larger than the shadow price (assuming that the

market outside the constrained area is competitive). Therefore, it is useful to examine the historical shadow prices for the interface into NYC.

70. The following figure shows a histogram of the shadow price data for the NYC interface in 2001. This figure shows that 572 hours reflected a shadow price greater than zero (i.e., the constraint was binding).[4] Given this frequency of constraints, the threshold value that would apply to NYC under the 2 percent annual threshold would be $15 per MWh (see figure 1 above). This threshold would apply to all of the generation within NYC whenever the NYC constraint is binding (and no other constraints are binding at sub-load pocket levels for which different thresholds would apply). If constraints are binding on the interfaces at both the NYC and sub-load pocket levels, the $15 threshold would only apply to the NYC suppliers outside of the sub-load pockets.

Figure 2
Congestion Measured by the Shadow Price on NYC Interface
Real Time Market -- January to December 2001



71. As shown in figure 2, approximately 60 percent of the constrained hours exhibited shadow prices less than $15 per MWh. The portion is even higher later in the year. In most hours, therefore, suppliers would not have the ability to raise prices within NYC by the threshold level of $15 even if one were to assume that all historical shadow prices were the product of market power. This is discussed further below. First, the next section quantifies the frequency of congestion into the 138 kv load pocket and the sub load pockets on the 138 kv system.

C. Frequency of Congestion into the 138 kv Load Pocket and Sub Load-Pockets

72. Historically, the constraints into and within 138 kv system were not modeled by the SCD. Instead, these constraints were managed with out-of-merit dispatch of generation. Therefore, I estimated the frequency of congestion by identifying the hours in which generation was dispatched out-of-merit to resolve a load pocket constraint.

73. These estimates are likely to provide a less accurate forecast of future congestion that will occur once the load pockets are included in the SCD model than the shadow price counts presented in the prior section for the NYC interface. Nevertheless, this is the best information available for forecasting the frequency of congestion and provides a reasonable basis for establishing the load pocket thresholds.

74. To identify load pocket congestion, I used the ISO operating logs for the out-of-merit dispatch. The logs contain codes that categorize the reasons for the out-of-merit dispatch. Using these codes, I was able to identify which out-of-merit dispatch actions were related to resolving transmission constraints within NYC. Further, the logs contain a description that identifies which transmission facilities or load pockets required the out-of-merit action. I was able to use this description to

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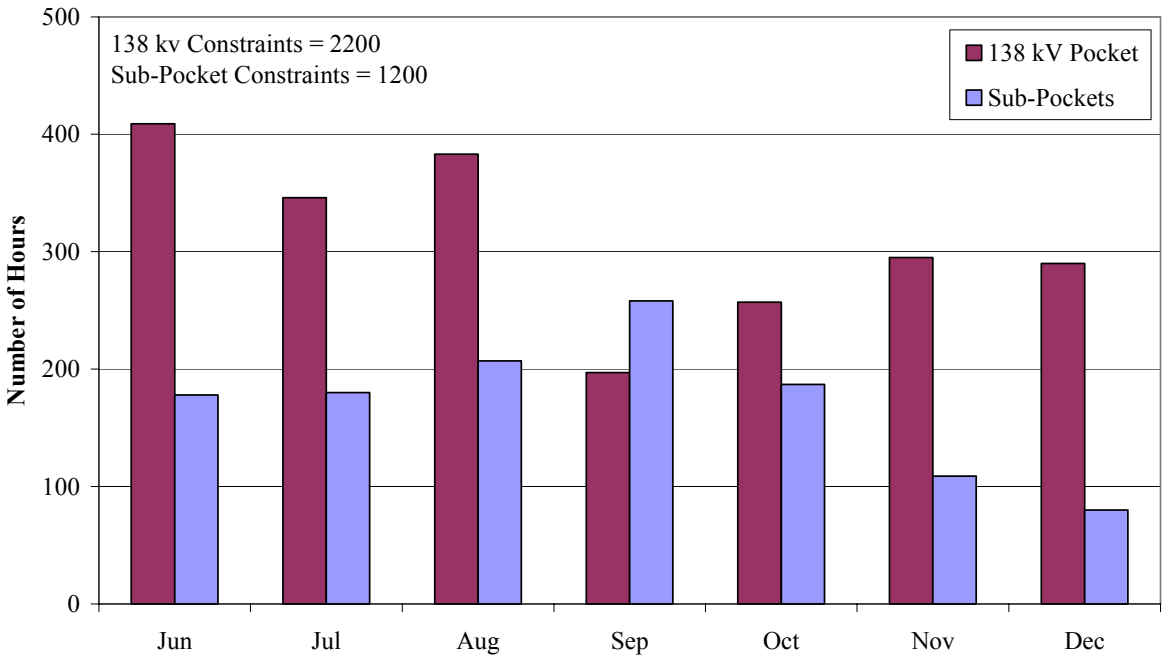
[4] This frequency represents an aggregation of the 5 minute dispatch results. If one were to count the hours by identifying any hour in which at least one 5 minute interval showed a positive shadow price, the total would equal 694 hours.

differentiate between congestion into the 138 kv system versus congestion into the sub-load pockets on the 138 kv system.

Figure 3
Frequency of Out-Of-Merit Calls in NYC Load Pockets
June to December 2001



75. Figure 3 shows the results of this analysis. The values shown for the 138 kv load pocket include all hours when generation was dispatched out-of-merit to resolve the constraint (even if generation was also out-of-merit to resolve a sub load pocket constraint). To avoid double counting, the values shown for the sub load pockets do not include any hours when the constraint into the 138 kv load pocket is also binding.

76. This period analyzed begins in June 2001 because the out-of-merit log data does not exist at the same level of detail prior to this date. However, prior to the thresholds being implemented in May 2002, the additional data from 2002 will be added to these estimated frequencies.

77. These data shows that the constraints are binding much more frequently into the 138 kv system than they are into the 345 kv system entering NYC. Therefore, the exposure of the market in these areas to market power under a fixed threshold would be much higher. However, the declining threshold at the 2 percent level will account for this by establishing a much lower threshold, less than $5 per MWh if these frequencies continue and assuming an average price of $49 per MWh.

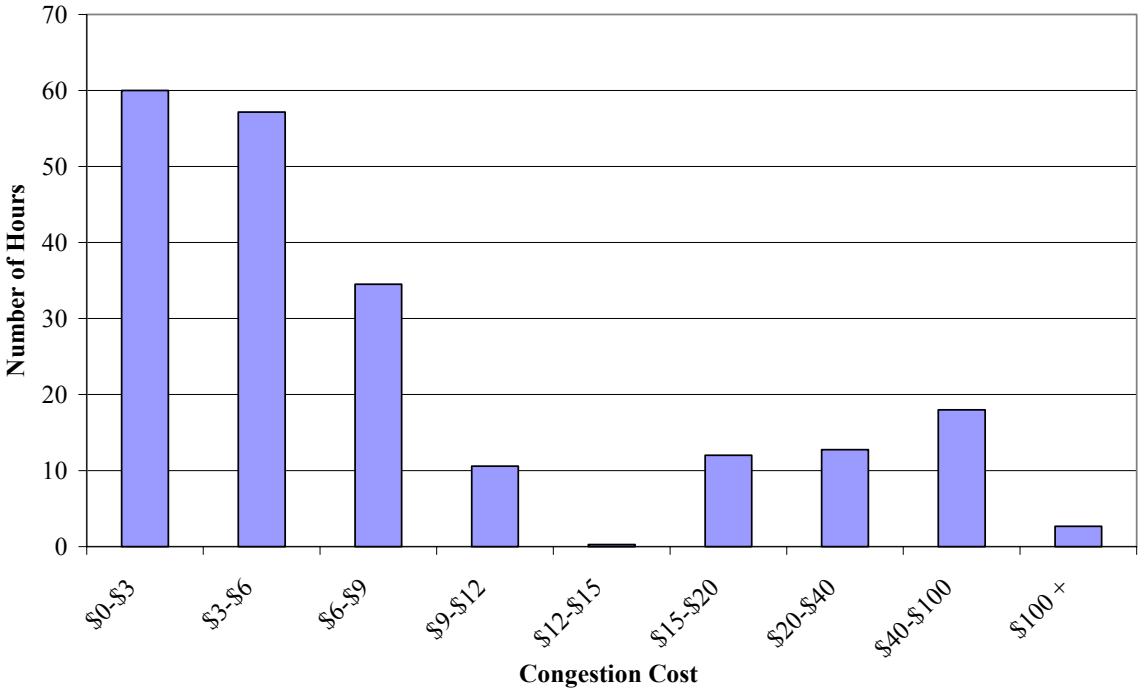
D. Analysis of the 2 Percent Level

78. As described above, the 2 percent annual level that serves as the basis for setting the thresholds for the transmission constrained areas does not represent a likely increase in prices during the year. Because suppliers do not enjoy monopoly market power in each hour that a constraint is binding, prices will not be increased by the 2 percent annual level. This section contains an analysis of the actual exposure of the market to locational market power.

79. Figure 4 below shows the shadow prices on the interface into NYC that have prevailed from June to December 2001 (the same time period for which out-of-merit data is available).

80. This figure shows that 78 percent of the hours exhibited shadow prices less than the $15 projected threshold for NYC. Even if one were to assume that 100 percent of the shadow prices shown were direct result of market power abuses, the potential actual exposure of the market to locational market power would be far less than the 2 percent annual level.

Figure 4
Congestion Measured by the Shadow Price on NYC Interface
Real Time Market -- June to December 2001



81. In NYC for example, the import constraint may bind at low load levels where substantial excess capacity exists, held by no less than five suppliers. Under those conditions, the constraint creates no significant amount of market power. It is not surprising under these circumstances that there are many hours in which the shadow price on the import constraint is very small. Based on this historical data, one may conclude that under the proposed thresholds the exposure of the market to price increases due to locational market power is substantially less than 2 percent, since it is unlikely that sellers would be able to exercise market power in every one of the constrained hours.

82. If generators could successfully raise prices by $15 in all of the assumed 572 hours of congestion (see ¶ 70), that would annualize to a 2% increase in the historic weighted average price of $49. The actual increase, however, would be well below the 2 percent level because the shadow price was less than $15 in 78 percent of the hours when the NYC constraint was binding in real-time. If market power existed

during the congested periods historically, then the price impact of the locational market power in the constrained area can be no larger than the shadow price that actually existed (i.e., the largest potential impact of the market power would be estimated by assuming that the shadow price would have been zero absent market power).

83. Therefore, assuming all shadow prices shown in the historical data are created through an exercise of market power, the actual estimated value of the $15 threshold for NYC would be 0.9 percent on an annual basis. This is computed by assuming that in the portion of hours when the shadow price was less than the $15 threshold in the real-time market, suppliers did not have the ability to raise prices by more than the shadow price during the constrained hours. Likewise, in the portion of hours with a shadow price greater than $15, I assumed that suppliers would have the ability to raise prices by the threshold amount (although this is likely not the case in many of these hours). This 0.9 percent would represent the high side of the range of exposure related to the constraint into NYC since much lower thresholds would have applied to much of the generation within the NYC sub load pockets that were binding in the same hours as the NYC constraint.

84. To assess the total exposure of the market to locational market power, I examined the extent to which the import constraint into NYC occurred in the same hours as the import constraints into the lower level load pockets. I found that in 63 percent of the hours when the import constraint into NYC is binding, constraints are also binding into the 138 kv system or its sub load pockets.

85. Hence, when the NYC constraint is binding, substantially tighter thresholds will apply to the generation within the load pocket. By examining the shadow prices within each of these hours, I was able to estimate a range of potential exposure to locational market power within NYC.

86. One may safely assume that no additional locational market power is attributed to the NYC constraint when lower level load pocket constraints are binding because this market power would be accounted for and mitigated by the lower level load

pocket thresholds. Making this assumption, I estimated the total exposure to locational market power associated with the NYC constraint to be 0.3 percent. The difference between the prior 0.9 percent estimate and the 0.3 percent estimate reflects the fact that in 63 percent of the hours when the NYC constraint is binding, lower thresholds will constrain the bidding of generators in the lower level load pockets. Thus, the estimated exposure to locational market power is estimated to be 0.3 percent associated with the NYC constraint.

87. A number of factors affecting this estimate create some uncertainty regarding this estimate. First, one should expect that the constraint into NYC will be binding even in perfectly competitive markets. That is, the NYC price could be perfectly competitive but nonetheless higher than the prices outside NYC and thus result in a positive shadow price. Hence, the assumption that the historical shadow prices provide a reasonable forecast of locational market power abuses will tend to overestimate the true exposure of the market to economic withholding.

88. Second, the out of merit dispatch that had been used to manage the transmission constraints within NYC likely served to reduce the frequency and magnitude of the shadow prices. This would be the case because out of merit dispatch is generally an imprecise means for managing congestion. To the extent that this imprecision results in larger quantities of generation within the load pockets being dispatched out of merit than would be the case when the load pocket interfaces are modeled within the SCD, the flow into NYC will be reduced – as will the associated congestion. Therefore, there is potential uncertainty, both upward and downward, regarding the estimated range. Given these counterbalancing factors, I conclude that the estimated range provides an appropriate basis for assessing the reasonableness of the proposed In-City thresholds.

89. This estimate for NYC must then be combined with the potential exposure at the 138 kv and sub load pocket levels. I estimated the exposure for the 138 kv system by assuming the same distribution of shadow prices as was experienced for NYC since the 138 kv encompasses most of the city. Given the frequency of constraints

into the 138 kv system, the threshold would be slightly less than $3 per MWh. If one assumes that the portion of hours with a shadow price less than $3 would be limited to a price increase equal to the shadow price while the portion with shadow prices above $3 would be limited to a $3 increase, the total estimated increase for the 138 kv system would be 1.7 percent. Again, this is conservative because it does not assume that any of the shadow prices that would emerge are the natural product of a competitive market.

90. For the sub-load pockets, I simply assumed that the market was narrow enough that suppliers would have the ability to raise prices by the threshold quantity whenever they are binding. Based on the frequency analysis described above, constraints are only binding 33 percent of the hours independent of the 138 kv system. In other words, the cumulative number of congested hours used for establishing the thresholds for the sub load pockets would reflect constraints that are binding onto the 138 kv system, which are two thirds of the total hours counted as constrained for the sub load pockets. Hence the maximum additional price increase that can be forecasted for the sub load pockets is 0.67 percent (one third of 2 percent).

91. Aggregating these results, I am able to provide a forecast of the total potential exposure of the market in the various load pocket areas to locational market power under the proposed mitigation plan. Outside of the 138 kv system within NYC, the exposure is estimated at 0.3 percent. On the 138 kv system, the total exposure is estimated to be 2.0 percent. This estimate for the 138 kv system is produced by adding the estimated locational market power that may occur on the 345 kv system in hours when the 138 kv interface is not binding (i.e., 0.3 percent) to the range estimated for the 138 kv system (1.7 percent).

92. Finally, the exposure to locational market power in the sub load pockets are estimated to be 2.7 percent, calculated by adding the additional exposure to the locational market power that may occur when constraints are binding only into the sub load pockets to the exposure estimated above for the 138 kv system (i.e., 2.0 + 0.67 percent).

93. Hence, even under very conservative assumptions, the forecasted exposure of the market in NYC may range from 0.3 percent to 2.7 percent, well below the five percent level generally employed by antitrust agencies and the Commission to evaluate market power. Based on these results, the 2 percent annual threshold level is a conservative, but reasonable level for setting the threshold levels for the load pockets.

94. Because the foregoing estimates are necessarily based on projections from historic data, they are inevitably subject to some degree of uncertainty. Accordingly, I recommend that the thresholds be reassessed after the modeling changes and locational mitigation structure has been in place for a specified period of time. A deadline for this reassessment of March 1, 2003 to allow time to modify the threshold levels prior to the Summer 2003 if necessary would be reasonable.

95. The filing includes provisions that account for the fact that the locational mitigation applied in real-time will generally be implemented through the real-time dispatch of the SCD model. The SCD only dispatches generators that are "on-dispatch" status, which means they are able to receive updated dispatch signals every 5 minutes. The 30-minute gas turbines and off-dispatch generators receive hourly dispatch instructions from the BME model. Therefore, the mitigation will need to be applied through both the BME and the SCD to fully address the locational market power issues, although mitigation through the BME will be occur with a lag of as long as 2.5 hours (since BME runs 90 minutes prior to the hour).

96. In order for the locational mitigation measures proposed in this filing to be effective, it is important that the generators currently on-dispatch in NYC do not take themselves off dispatch voluntarily to reduce the effectiveness of the mitigation. Therefore, the tariff includes a requirement that generators within NYC capable of being on-dispatch, both physically and contractually, remain on-dispatch. This provision will ensure that the mitigation is not undermined by generators re-classifying themselves to take advantage of the delays in mitigation inherent to the BME process for off-dispatch units.

E. Day-Ahead Mitigation of Locational Market Power

97. Ideally, the structure described above for the mitigation of locational market power in the Real-Time market would be simultaneously implemented for the Day-Ahead market. The AMP software can be modified to implement this structure, but not prior to Summer 2002.

98. Therefore, the NYISO will continue to implement the ConEd In-City day-ahead mitigation measures through the coming summer with some key changes. These changes are designed to address certain concerns regarding the ConEd mitigation provisions and are described in the Affidavit of Dr. James Savitt.

V. Modifications to the Automated Mitigation Procedure

99. This section provides a summary of the changes proposed for the automated mitigation procedure ("AMP"), which implements the conduct-impact framework in the day-ahead market within the day-ahead commitment model.

100. An assessment of the AMP during the first summer of operation showed that it operated as designed. Even without the important refinements to the AMP that are described below, the conduct-impact framework that serves as the basis for all of the NYISO's mitigation measures limited mitigation through the AMP to four events. Only two of the four events were outside of Long Island.

101. Importantly, during the highest load periods when prices were close to $1000 due to legitimate shortages of supply, the AMP did not result in any mitigation. This is a direct result of using the conduct-impact framework, which generally precludes mitigation when the system is in shortage. When prices are justifiably high during shortage conditions, generators that have raised their bid prices and exceed the conduct thresholds will generally have little or no impact on energy prices. Rather, the mitigation measures are designed to address cases when withholding causes the energy market to produce shortage prices when the system is not in shortage.

A. Summary of Changes

102. Although the AMP was relatively selective in its mitigation during the past year, the refinements will improve the focus of the AMP. The first change is to add an additional dispatch pass to the day-ahead commitment model (the SCUC model).

103. The current process tests for mitigation when prices in one or more zones exceed $150 per MWh for at least one hour. To test for mitigation, the SCUC runs a commitment and dispatch pass of the model without mitigation and with mitigation (mitigation is tested only for those zones and hours with prices exceeding $150 per MWh). Based on a comparison of the results of the two passes, the mitigated results are retained and posted if the unmitigated prices exceed the mitigated prices by more than the impact threshold in any of the zones or hours.

104. This process can result in mitigation occurring in more hours or zones than the impact warrants. For example, mitigation may be tested in 4 hours in eastern New York on a given day using the $150 trigger, but show a sufficiently large price impact in only 2 hours within NYC. In this case, the current process would use mitigated bids for all four of the originally tested hours, since there is no way to narrow the fours hours based on the subsequent determination that only two of the four hours meet the impact test. However, the proposed revision would allow a third pass that could make such a determination, limiting mitigation to only those zones and hours in which the impact threshold is exceeded. This is consistent with the conduct-impact framework.

105. The second revision would establish a 50 MW portfolio exemption for the AMP. This revision would preclude mitigation in cases were a supplier is withholding less than 50 MW from its entire portfolio. To be clear, this exemption would be applied in the following manner:

- The conduct screen is applied by the AMP.
- The resources failing the conduct test are aggregated by bidding organization. When the start-up or minimum generation bid fails the conduct threshold, the

entire rated capability of the unit is included in this total. In addition, if the owner has an agent bidding the unit, the MWs failing would be attributed to the agent as well as the owner.

- If the quantity failing the conduct test for a bidding organization is less than 50 MW, mitigation is not undertaken on that bidding organization's units.

- If the quantity failing the conduct for a bidding organization is more than 50 MW, then all of those MW are subject to mitigation (not just the amount in excess of 50 MW).

106. Notwithstanding this exemption from the AMP, all resources would remain subject to the general mitigation measures. In addition, if analysis shows that the withholding of a small quantity of resources does substantially influence prices due to the resource's location or characteristics, then the 50 MW exemption may be reduced or removed for that bidding organization.

107. This justification for this revision and the supporting analysis of its potential effects are presented in the next section.

B. 50 MW Portfolio Exemption

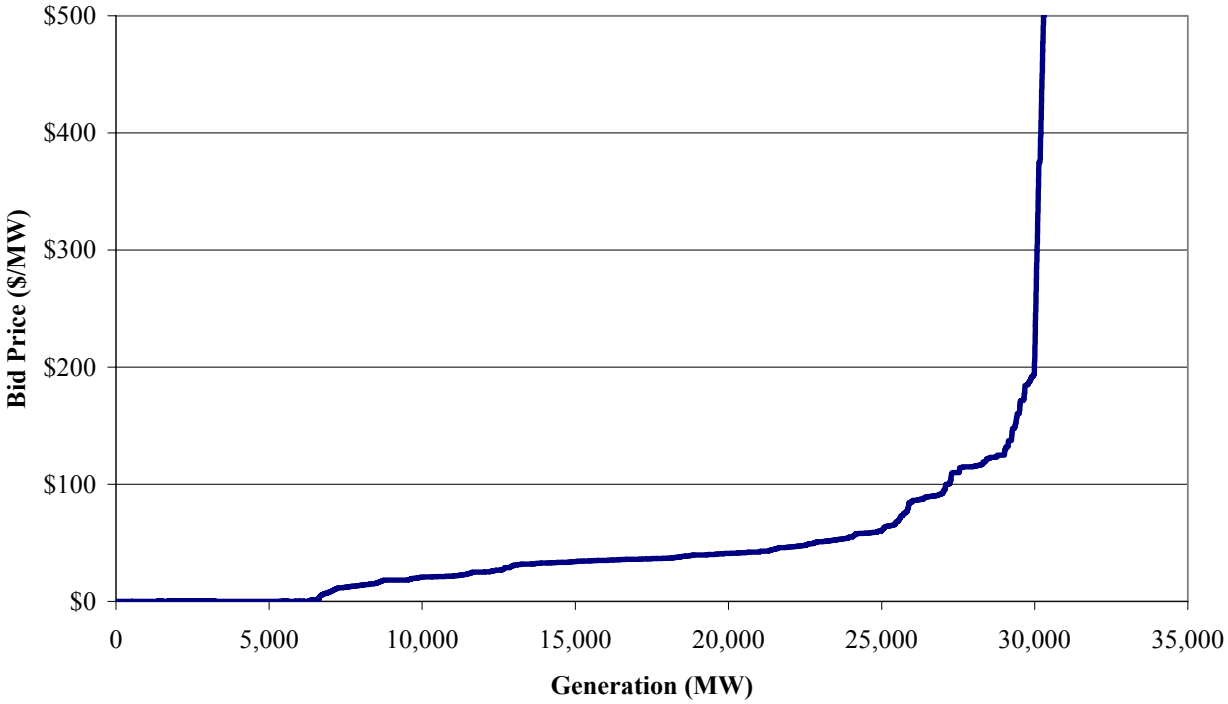
108. The 50 MW exemption is appropriate in the context of a mitigation procedure that is automated. Any automated procedure must be designed to correctly differentiate between conduct that is an attempt to exercise market power and conduct that is competitive. A quantity threshold is useful because at some quantity level, the amount withheld is small enough that the automated procedure should presume that the conduct is justified on other grounds. In other words, there is a level below which it is unreasonable to assume that the conduct is an attempt to exercise market power because its probability of significantly affecting the market outcomes is remote.

109. I recommend that the AMP exemption level be set at 50 MW. This quantity is sufficiently large to allow a single gas turbine or a small range on the upper end of a

steam unit to be bid at higher prices that may reflect legitimate marginal costs. In such cases, mitigating these units' bids and causing them to be dispatched in place of units that may be more reliable or have lower costs is not warranted. If a bidding organization has quantities larger than 50 MW that should justifiably be bid at higher bid prices, then it must seek a reference level adjustment from the NYISO that will prevent the AMP from mitigating its resources unjustifiably.

110. Some have raised concerns regarding the potential for the 50 MW exemption to result in successful abuses of market power. This should not be a concern for at least four reasons. First, the 50 MW quantity is sufficiently small so as not to have a significant impact on the market prices under most market conditions. Supply conditions within New York generally cause prices to be relatively unresponsive to small quantities of economic or physical withholding because the supply curve is relatively flat). This can be seen on the Figure 5 below that shows a representative supply curve from the day-ahead market in July 2001.

Figure 5
Example of Day-Ahead Supply Curve
July 20, 2001 - Peak Hour



111. However the supply curve does include a steeply sloped segment at the peak output level. Prices in this range are much more responsive to withholding, which may be profitable for larger suppliers that have not committed their supplies in forward contract markets.

112. Under most conditions, the market will not clear in the steep portion of the supply curve because the load is not high enough. In fact, only 1.2% of the hours cleared in this range during 2001 in eastern New York. This frequency may be higher in transmission- constrained areas where transmission constraints can cause shortage conditions to prevail more often. Therefore, withholding of quantities less than 50 MW will continue to be monitored and may be reduced for a particular bidding organization as described in more detail below.

113. The second reason that the 50 MW is unlikely to allow significant market power to be exercised relates to the participation of the load in the day-ahead market. Load-serving entities have the right to submit load bids in the day-ahead market that represent the highest price they are willing to pay to purchase power on behalf of their load (i.e., price-capped load bids). Price capped load bids allow the load-serving entities to participate in the day-ahead market in an economically rational manner.

114. At the same time, this ability allows the loads to protect themselves against and render ineffective artificial price increases in the day-ahead market. The loads must take advantage of this capability because the mitigation measures should not be employed to address the effects of load bidding that is not economically rational.

115. The price-capped load bidding had not been utilized extensively during the first year of NYISO's market operation. However, the capability was expanded during 2001 and the price-capped bid quantities increased during the year as the LSEs have grown more familiar with its value.

116. Table 1 shows the current levels of price-capped load bidding extending back to last November when virtual bidding was implemented. These levels are shown by price

category to provide a more accurate indication of how much load would be reduced as prices rise. For purposes of mitigating attempts to artificially raise prices, load bids at lower price levels are much more effective at mitigating these strategies. Clearly, these levels are substantially higher than the 50 MW exemption.

117. In addition, the table shows these quantities at three geographic levels to ensure that the bid quantities are not concentrated in locations that make them less useful in mitigating potential market power.

Table 1
Average Price-Capped Bid Load During Peak Hours in the Day Ahead Market
November 2001 - February 2002

		Priced-Capped Load Bids Offered:					
		From $0 To $50	From $50 To $100	From $100 To $150	From $150 To $200	From $200 To $250	From $250 To $1000
New York City and Long Island							
2001	**Nov**	438	51	50	0	528	400
	Dec	497	59	50	0	374	374
2002	**Jan**	368	162	50	0	357	357
	Feb	414	111	50	0	355	355
East of Central-East Interface							
2001	**Nov**	1,170	51	50	0	1,140	400
	Dec	1,292	77	50	0	885	475
2002	**Jan**	1,158	209	50	0	800	520
	Feb	1,247	135	50	0	774	495
All New York State							
2001	**Nov**	1,879	51	50	0	1,140	400
	Dec	2,078	91	50	0	885	475
2002	**Jan**	1,957	226	50	0	800	520
	Feb	2,040	135	50	0	774	495

Source: NYISO day-ahead bid data.

118. An additional consideration that may be important is the fact that some price-capped load bids may be submitted to arbitrage price differences between the day-ahead and real-time market rather than to serve physical load. In other words, price-capped load bids in excess of forecasted load that are not accepted are not protecting against artificial price increases for serving physical load, but are bids to purchase excess energy when prices are artificially low.

119. To account for this, I have subtracted the excess price capped bid load with the lowest bid prices in each hour from the quantities in Table 1, the results of which

are shown in Table 2. The results shown in this table do not contradict the conclusion that sufficient capacity is being bid close to expected price levels so as to effectively mitigate small quantities of withholding by physical suppliers in the day-ahead market.

Table 2
Adjusted Average Price-Capped Bid Load During Peak Hours in the Day Ahead Market
November 2001 - February 2002

		Priced-Capped Load Bids Offered:					
		From $0 To $50	From $50 To $100	From $100 To $150	From $150 To $200	From $200 To $250	From $250 To $1000
New York City and Long Island							
2001	**Nov**	291	51	50	0	528	400
	Dec	451	59	50	0	374	374
2002	**Jan**	358	162	50	0	357	357
	Feb	357	111	50	0	355	355
East of Central-East Interface							
2001	**Nov**	784	51	50	0	1,140	400
	Dec	1,134	77	50	0	885	475
2002	**Jan**	1,103	209	50	0	800	520
	Feb	1,106	135	50	0	774	495
All New York State							
2001	**Nov**	1,634	51	50	0	1,140	400
	Dec	1,983	91	50	0	885	475
2002	**Jan**	1,935	226	50	0	800	520
	Feb	1,868	135	50	0	774	495

Source: NYISO day-ahead bid data.

120. The third factor that serves to mitigate the exposure of the market to small quantities of withholding is virtual supply bids. Virtual bidding was implemented in November 2001 and allows market participants without physical generation or load to take positions in the day-ahead market that are settled in the real-time market.

121. For example, a market participant without physical resources may make a sale into the day-ahead market, purchasing the energy back from the real-time market. This is referred to as “virtual supply”. To the extent that an attempt to economically withhold physical resources from the day-ahead would cause prices to rise, virtual suppliers would have an economic incentive to make sales at the artificially inflated price and buy back the energy in the real-time market.

122. Together, price-capped load bids and virtual supply bids will both reduce the ability of physical suppliers to withhold resources to raise prices. The summary provided below in Table 3 shows the NYISO's recent experience virtual supply bids. Like the tables above showing the price-capped load bidding, I have organized these bids into various bid price categories.

Table 3
Average Virtual Supply Bids During Peak Hours in the Day Ahead Market
November 2001 - February 2002

		Priced-Capped Load Bids Offered:					
		From $0 To $50	From $50 To $100	From $100 To $150	From $150 To $200	From $200 To $250	From $250 To $1000
New York City and Long Island							
2001	**Nov**	0	0	0	0	0	0
	Dec	10	0	0	0	0	0
2002	**Jan**	253	0	0	0	0	0
	Feb	348	55	0	0	0	0
East of Central-East Interface							
2001	**Nov**	30	0	0	0	0	0
	Dec	153	0	0	0	0	0
2002	**Jan**	617	0	0	0	0	0
	Feb	661	55	0	0	0	0
All New York State							
2001	**Nov**	113	0	0	0	0	0
	Dec	276	0	0	0	0	0
2002	**Jan**	872	0	0	0	0	0
	Feb	902	55	0	0	0	0

Source: NYISO day-ahead bid data.

123. Like the price capped load bids, the bids at lower price levels are more effective at mitigating attempts to artificially raise prices. Substantially all of the virtual supply bids have been offered in the lowest price category where prices in the energy market clear most frequently. In addition, substantial amounts of virtual supplies are offered in the various geographic regions shown and these amounts have been increasing as market participants gain experience with virtual bidding.

124. These results, together with the price-capped load bidding results, indicate that the recent price-capped load bidding and virtual supply bidding is more than sufficient to counter relatively small amounts of economic withholding by one or more physical suppliers in the day-ahead market.

125. Some stakeholders have suggested that a 50 MW exemption from the AMP is unwarranted because some number of bidders may seek to take advantage of the exemption at the same time, resulting in larger total quantities of withholding. This is not a valid basis for foregoing the exemption. First, even multiple suppliers withholding 50 MW would not likely have a significant effect on prices under most demand conditions given the nature of the supply.

126. Second, even if multiple suppliers each withhold 50 MW, it would be unlikely that the total withholding would exceed the recent levels of price-capped load bidding and virtual supply bids. Lastly, this concern presumes a level of tacit collusion that has not been in evidence to date and is not likely to be economically rational in the absence of an explicitly collusive arrangement, which would be plainly illegal under the antitrust statutes.

127. The last reason why the 50 MW exemption should not pose a significant market power issue is that the NYISO has proposed to have the authority to reduce or eliminate the 50 MW exemption for an individual bidding organization. Notwithstanding the factors described above, an individual supplier may become pivotal due to a transmission constraint or other system condition that would allow the supplier to exercise market power by withholding fewer than 50 MW.

128. In this case, a separate analysis of the conduct of the individual bidding organization would provide sufficient grounds for reducing the 50 MW exemption. Therefore, the NYISO could quickly address any situation where the 50 MW exemption is allowing a physical supplier to exercise market power.

129. Taken together, these factors indicate that the 50 MW exemption will not allow significant market power to be exercised in the day-ahead market. The exemption is therefore an appropriate means for minimizing the automated mitigation of conduct that does not reflect an attempt to exercise market power.

VI. Revisions to the Current MMM

130. This section summarizes a number of other changes that are proposed in the Comprehensive mitigation filing regarding the existing mitigation measures. These changes have been identified based on the experience gained over the past two years with the measures.

A. Non-price Bid Parameters

131. The mitigation measures do not currently include separate thresholds that would apply to non-price bid parameters, such as the minimum run time of a unit or response rates. However, these bid parameters may be used as effectively to withhold a resource as the energy bid price for the resource. For example, an owner could withhold a resource by lengthening the start-up time or notification time, or by dramatically reducing its response rates.

132. To date, the percentage thresholds included in the MMM have been used to screen these parameters. However these thresholds are not always appropriate or effective. Therefore, this section describes specific thresholds that I recommend for these non-price bid parameters. In addition, these thresholds allow the NYISO to effectively address a number of gaming strategies that the New York Public Service Commission has raised as potential concerns.

133. The non-price bid parameters can generally be categorized by those that are time-based (denominated in hours) and those that are not. The time-based parameters include the minimum run-time, minimum down-time, start-up times, and notification time for start-up. To prevent units with relatively long reference levels for these time-based parameters from effectively withholding by raising these values by the percentage thresholds within the MMM, I recommend the use of time-based thresholds.

134. These recommended thresholds are: a 3 hour increase for any single parameter, or a 6 hour total increase for any combination of parameters. Thresholds at these levels are reasonable and should facilitate effective monitoring and mitigation of attempts

to withhold using these parameters. In addition, these proposed thresholds are comparable to the provisions included in the ISO New England's mitigation plan.[5]

135. For the non time-based bid parameters, I have proposed two threshold values. First, an increase of 100 percent would be the threshold value for variables that serve as a minimum value. Second, a decrease by 50 percent would be the threshold value for variables that serve as a maximum values, including maximum stops and response rates. Like the other thresholds proposed in this plan, these thresholds provide reasonable flexibility for suppliers to modifying these parameters and also allow for effective monitoring and mitigation of attempts to withhold using these parameters.

136. I do not recommend, and the NYISO does not propose, using these thresholds to implement mitigation through the AMP or any other automated procedure. Rather, mitigation would only occur prospectively by applying the default bid measure after the NYISO had considered the technical justification offered by the bidding organization for changes in these parameters.

137. Taken together, these changes represent a significant improvement in the ability of the NYISO to detect and prospectively mitigate a broader array of strategies to withhold resources to raise prices.

B. Default Reference Level

138. The second change proposed to the current mitigation measures provides additional detail regarding the process for estimating a default energy reference level when a bid-based reference level cannot be computed. This revision includes a formula that would be used as a starting point for establishing the default reference level.

139. The default reference level should, as much as possible, equal the marginal cost of the generating resource. Because the marginal costs of most resources primarily reflect the variable cost of the resource, the starting point is based on a formula that includes the variable production costs of the resource. The variable production costs include the fuel costs, the environmental costs, and the variable operating and

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[5] NEPOOL Market Rule 17, Section 17.2.2.2 (e).

maintenance costs ("O&M") for the resource. Hence the following formula will be included in MMM:

(heat rate * fuel costs) + (emissions rate * emissions allowance price)
+ (other variable O&M costs)

140. While this formula serves as a starting point for estimating a default reference level, the NYISO would still have the ability to accommodate other factors that may cause the marginal costs of a resource to exceed its variable production costs. In addition, the other alternatives for estimating a default reference level would remain viable alternatives.

C. Reference Level for New Generation

141. The third revision to the MMM proposed in the Comprehensive Mitigation Filing is a provision that would apply to new generating capacity. The provision is intended to recognize that new capacity can only make the market more competitive at the time of entry. At worst, the new capacity could be completely withheld – in which case the market would only reflect pre-entry conditions. That is, the market would be no worse off than if the new entrant had simply not entered in the first place.

142. Over the longer-term however, the new capacity can become pivotal as load grows or other generation is retired. Hence, it would be inappropriate to permanently exclude new capacity from the mitigation measures. To balance these factors, I have recommended that a reference level floor be established at the average of the peak prices that prevailed prior to the entry of the new capacity during hours the new capacity (based on its characteristics) would be expected to run. This floor would remain in place for three years from date that the new capacity is brought online.

143. The reference level floor is intended to minimize the perceived risk that the mitigation measures may pose for new generators by allowing the new resource to be bid at levels that exceed the peak price levels pre-entry. It is important to note that this is not a rational bidding strategy and is highly unlikely to be employed by any new generator. Nevertheless, this provision will serve to reduce the potential

disincentive that new generators may perceive to be associated with the mitigation measures.

D. Physical Withholding Thresholds

144. The last modification proposed to the current MMM relates to the physical withholding thresholds. As opposed to the bid price thresholds used in mitigating economic withholding, the MMM employs quantity thresholds for mitigating physical withholding. No such quantity thresholds exist for economic withholding within the MMM.

145. Although these quantity thresholds are justifiable for the market in general, substantial abuses of market may be possible with smaller levels of withholding within transmission constrained areas, such as NYC. This is particularly true for the highly concentrated sub load-pockets within NYC.

146. Therefore, I have recommended that the quantity thresholds for physical withholding be eliminated for the transmission constrained areas to which the local mitigation measures apply. Even though the quantity thresholds would be eliminated, mitigation would only apply if all of the other criteria defining physical withholding are met and the withholding exceeds the impact threshold.

147. Hence, this modification will not contribute to unwarranted mitigation – it is simply intended to ensure that appropriate scrutiny is applied to smaller quantities of physical withholding occurring in constrained areas where locational market power is likely to exist.

E. Access to Contract Information

148. The market monitoring and prospective mitigation framework described in the Comprehensive Mitigation Filing addresses attempts to withhold resources from the NYISO spot markets. This approach is premised on the fact that effective mitigation of the spot market will discipline the forward energy markets as long as buyers and sellers can freely move between the spot and forward markets.

149. Hence, access to physical and financial bilateral contracts used to trade energy in forward markets or hedge spot price fluctuations is generally not necessary. However, some contracts transfer the control of generating assets between participants, usually by granting the purchaser control of the bids submitted for the asset. In order to effectively monitor the market and carry out the mitigation, the NYISO must have access to this subset of the bilateral contracts.

150. These contracts allow the ISO to properly implement the 50 MW exemption for the AMP described above and to properly assess the conduct that is identified through its screening process. Therefore, the NYISO proposes to guarantee ready access to this contract information by modifying Addendum B to the Market Monitoring Plan to add these types of contracts. The data listed in this addendum must be provided upon request from the NYISO as specified in section 6.2.2 of the Market Monitoring Plan.

F. Minimum Bid Levels Subject to Mitigation

151. The last change to the MMM is the addition of a provision that would preclude mitigation of energy and minimum generation bids below $25 per MWh and of reserve availability bids less than $5 per MW. I have recommended these changes because it is possible that bids in these ranges for resources with very low reference prices could exceed the conduct thresholds in the plan even though it is highly unlikely that they could constitute an abuse of market power.

152. Bids in these ranges have never been mitigated by the NYISO. However, the minimum bid levels will ensure that mitigation would not be considered for relatively low priced bids. These provisions, with the same bid levels, are included ISO New England's mitigation measures contained in their Market Rule 17.

VII. Conclusion

153. These modifications in the current MMM, together with the new provisions to address locational market power within NYC and replace the ConEd in-city mitigation, provide an appropriate comprehensive structure for mitigating market power. By employing the conduct and impact structure described in the filing, the NYISO's mitigation measures will be effective while minimizing interference in the markets.

154. This concludes my affidavit.

ATTESTATION

I am the witness identified in the foregoing affidavit. I have read the affidavit and am familiar with its contents. The facts set forth therein are true to the best of my knowledge, information, and belief.

David B. Patton

March 19th, 2002

Subscribed and sworn to before me
this 19th day of March, 2002

Notary Public

My commission expires: 10/31/2003