Market Monitoring & Performance Department

Evaluation of the Revised Market Monitoring and Mitigation Procedures

December 2004

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1.0 Executive Summary

As a result of ongoing observation and a thorough analysis of results, the New York Independent System Operator (NYISO) did not find any significant concerns with the operation of revised market monitoring and mitigation procedures from June 1, 2002 through September 30, 2004 (the "Relevant Period").

The Market Monitoring and Performance (MMP) department of the NYISO has analyzed the mitigation programs in effect during the time period from June 1, 2002 through September 30, 2004 as directed by FERC in its May 31, 2002 Order, which extended the Automated Mitigation Procedure (AMP) and other mitigation measures. The analysis includes changes implemented in the revised measures. The following are our conclusions:

Analysis of the mitigation measures approved by the Commission at the request of Consolidated Edison Company of New York prior to the inception of the NYISO ("ConEd Measures") in place for the In-City Day-Ahead Market[1] during the first part of the Relevant Period shows that the improvements to the ConEd Measures implemented by the NYISO achieved their goals. The change to a 107% congestion trigger implemented on June 1, 2002 adequately provided a buffer from the original 105% to ensure generation was not being mitigated due to losses. There is no evidence that this mitigation plan failed to identify and mitigate market power at any time. While the ConEd Measures, as modified by the NYISO's Comprehensive Mitigation Measures filing, performed as designed, the restrictive nature of this mitigation plan resulted in an unduly high frequency of mitigation, and therefore its replacement with conduct and impact Constrained Area mitigation was beneficial.

The Comprehensive Mitigation Measures filing implemented a number of improvements in the Automated Mitigation Procedures ("AMP"), the automated implementation of conduct-and-impact mitigation, on June 1, 2002. This revised AMP ("AMP II") included automated mitigation for the In-City Real-Time Market at thresholds that reflected the extent of transmission constraints into NYC. The lower thresholds are appropriate because of the significant transmission constraints affecting the In-City area, resulting in its designation as a Constrained Area in accordance with the requirements specified in the Services Tariff (Attachment H).

The new mitigation program deployed on May 1, 2004 replaced the In-City ConEd Measures for the Day-Ahead Market with the conduct and impact approach, including an AMP ("AMP III"). The AMP III improved the selectivity of congestion-based mitigation, while still providing an effective means to mitigate market power. The AMP III improvements are designed to ensure that mitigation will only take place during the exercise of market power and not under scarcity conditions. MMP determined that the AMP mitigated prices only when it was appropriate to do so, and the MMP did not detect any

[1] Unless otherwise specified, capitalized terms have the meanings set forth in the NYISO's Market Administration and Control Area Services Tariff ("Services Tariff").

anomalous or detrimental results from mitigation in the first five months of the AMP III mitigation.

The statewide day-ahead AMP did not mitigate any generation during the Relevant Period. MMP reviewed the fifty days during which LBMPs exceeded the $150 threshold that activates the statewide AMP, and confirmed that there were no instances in which the AMP should have mitigated any generation. MMP believes the AMP reliably tests for market power, and the conduct and impact thresholds accurately distinguish between market power and true scarcity conditions. While the conduct of market participants in the upstate region during the Relevant Period has not led to mitigation, the presence of the AMP provides an important safeguard against market power abuse should it arise, and has not deterred legitimate price increases.

The real-time In-City mitigation has also achieved the goal of mitigating market power under the transmission constraints affecting the In-City area. Based on experience in the Day-Ahead Markets, MMP believes that implementation of the SMD2 market on February 1, 2005,[2] which incorporates a more refined impact test for real-time mitigation, and also will implement statewide real-time automated mitigation in the manner approved by FERC in its order on rehearing.[3] This will help ensure that mitigation only occurs when the appropriate conditions are present.

MMP also presents a discussion of the load pocket thresholds (LPTs) applicable in areas designated as Constrained Areas (presently, only New York City), the intent of the thresholds, and the effect of the thresholds on the energy markets. An initial analysis of the thresholds finds that there is no systematic change in behavior in response to changes in the LPTs. MMP also concludes that there is little or no evidence to date that the 2% threshold serves as a barrier to entry. The analysis of the LPTs is ongoing.

Market Monitoring is continually improving its ability to capture mitigation data and analyze the effects of mitigation, and will continue to evaluate measures to improve and fine-tune the market monitoring and mitigation procedures to ensure competitive markets. The MMP believes that such assessments after SMD2 has been implemented will provide better guidance on the continued implementation of real-time mitigation than analysis of mitigation results prior to SMD2.

[2] New York Independent System Operator, Inc., 106 FERC 61,111 (2004), and *New York Independent System Operator, Inc.*, 108 FERC 61,188 (2004) (Docket Nos. ER04-230-002. *et al.*}

[3] *New York Independent System Operator, Inc.,* 108 FERC 61,888 (2004) (Docket Nos. ER04-230-002, *et al*)

2.0 Introduction

The Commission's Order on Requests for Rehearing and Motion[4] in the dockets for the NYISO's March, 2002, Comprehensive Mitigation Measures filing,[5] directed the NYISO "to file, on or before December 2, 2004, a report on the operation of the revised market monitoring and mitigation procedures for the period between its approval by the May 31, 2002 order and the end of the 2004 summer capability period, September 30, 2004." The May 31, 2002, order approved a June 1, 2002, effective date for revised market monitoring and mitigation procedures. This report is submitted in response to the Rehearing Order directive.

Mitigation has been part of the New York's energy markets since 1999, with the NYISO's "conduct-and-impact" mitigation measures first being implemented in the Spring of 2000. The Market Monitoring and Performance Department (MMP) within the NYISO is responsible for the implementation of the mitigation measures and the analysis of the results.

The report first describes the types of mitigation implemented by the NYISO for the Day Ahead and Real-Time Markets. The performance of the mitigation measures in effect for the time period required by the order is analyzed, including the market impacts and the effectiveness of each mitigation program at identifying market power. MMP also reviewed each mitigation program to determine any specific instances in which the mitigation programs failed to meet their stated goals.

3.0 Description of Mitigation Programs

The NYISO uses a "conduct and impact" approach to mitigation. The "conduct" test determines whether a unit's offer exceeds specific thresholds that determine the competitiveness of the bid. The "impact" test then determines if the conduct has a significant impact on prices or guarantee payments, also measured against specific thresholds. A unit must fail both tests to be mitigated to its default reference bid, as prescribed by Attachment H (the Market Mitigation Measures) to the Services Tariff. Default bids are based on an average of a unit's bids during specified competitive periods, or if adequate bidding data is not available, are determined through specified cost-based methods. The conduct and impact approach is designed to distinguish between exercises of market power and scarcity conditions.

The following are descriptions of the automated mitigation programs in effect in the Day-Ahead and Real-Time Markets since NYISO market inception in 1999. Manual conduct and impact mitigation was approved in the original Market Mitigation Measures, and has been in effect for all markets since the spring of 2000, but has not been needed in markets subject to an AMP. This report analyzes only the mitigation in effect between FERC approval of the

[4] *New York Independent System Operator, Inc.*, 103 FERC 61,291 (2003) ("Rehearing Order").
[5] Docket Nos. ER01-3155-003, ER01-1385-012 and EL01-45-011.

revised market monitoring procedures on May 31, 2002, and the end of the 2004 Summer Capability Period, September 30, 2004.

Day Ahead In-City Mitigation – Market Inception through April 30, 2004

The ConEd Measures were deployed in the Security-Constrained Unit Commitment (SCUC) program when the Day-Ahead Market started. This plan subjected an In-City generator to mitigation for all hours of the day if the price at its bus was greater than the price at a fixed reference bus by a certain percentage in any one hour. The reference bus was just outside New York City, at Indian Point 2. Generators did not need to fail a specific conduct threshold; their bids only needed to exceed their cost-based reference price. If the simple conduct test and the reference bus price test were failed, a generator's bid was replaced by its reference price, set at fuel plus $1. The effective conduct threshold was zero for this initial mitigation approach, and there was no impact test as such.

Day Ahead Automated Mitigation Procedure (AMP) – June 2001 to May 2002

AMP automates New York's conduct and impact based mitigation process for the Day-Ahead Market ("DAM") within the SCUC program. The initial implementation of AMP mitigated on a zonal basis with four key components, as follows:

- Arming – Zonal LBMPs must exceed specified thresholds ($150 since the start of the AMP). If "armed," market results are assessed with bids failing conduct in that zone replaced with bids at the applicable reference levels.
- Conduct – Generator energy bids must exceed reference prices by predetermined thresholds ($100 or 300%).
- Impact – LBMP must be reduced by more than $100 when reference prices are substituted for bids.
- No-Harm Test – The new solution must not cause total load cost to increase.

If the impact and no-harm tests are met, final LBMPs will be determined using default bids at the applicable reference level for any unit breaching the applicable conduct test. Before AMP, manual mitigation was available statewide, and remains available for all bid-based markets.

Day-Ahead AMP II – June 2002 to May 2004

The second implementation of AMP made four enhancements to the original AMP: (1) adding a minimum quantity exemption; (2) adding an additional computation run to the SCUC; (3) adding enhanced modeling of reference price curves; and (4) adding automated mitigation of Start-Up payments on the basis of energy price impacts. The minimum quantity exclusion required that at least 50 MW of a bidding organization's portfolio ("portfolio exclusion") must fail conduct before subjecting the generators in that portfolio to the impact test for mitigation. The addition of another mitigation computation run to the SCUC enhanced both the geographic and temporal selectivity of the AMP, limiting mitigation to the specific zones and hours in which the impact test is met.

Real-Time In-City Mitigation – June 3, 2002

Real-time mitigation in New York City was enabled by the modeling of real-time load pockets in June 2002. New York City was designated as a Constrained Area under Attachment H, and thus subject to lower conduct and impact tests during hours of

transmission congestion into or within the City. In addition, because of the limited time available for mitigation calculations in the Real-Time Market and the limitations of the real-time software, a proxy for the full conduct test was used. Initially, MMP implemented real-time mitigation in NYC on a partially manual basis. The procedure was fully automated on December 19, 2002, with the same conduct and proxy impact tests. This plan subjected an In-City generator to mitigation when it was in an active load pocket as determined by differences in shadow prices across the relevant interface; if a generator failed the conduct and proxy impact tests, the software would use the generator's mitigated bid for all remaining intervals in at least that hour.

Day-Ahead AMP III – May 2004

The ConEd Measures for In-City DAM mitigation were replaced with conduct and impact mitigation using the tight thresholds associated with the In-City load pockets as a designated Constrained Area.[6] The In-City DAM mitigation also included an AMP, and enhancements to the previous statewide AMP were made by adding Start-Up, Minimum Generation, and Bid Production Cost guarantee (BPCG) payment testing and mitigation. The elements of the AMP In-City process are as follows:

- Arming - Generators are subject to mitigation only if they are in a pre-defined load pocket that becomes "active" because one of several transmission lines serving that pocket is congested, as measured by the shadow price (the marginal value of relieving a particular constraint) on the relevant interface.
- Conduct – Generators are subject to lower conduct thresholds than the threshold that applies statewide.
- Impact – LBMP impact is measured at each generator bus against certain lower predefined load pocket thresholds approved for a Constrained Area (generally much less than the $100 zonal threshold).

The no-harm test is still used for all AMP III mitigation. Energy, Start-Up, and Minimum Generation bids are mitigated as follows, provided they fail the conduct test:

- Energy – Bids are mitigated for a specific hour if the generator failed the applicable price impact test in that specific hour. In addition, bids are mitigated for all hours that the load pocket is active or zone arming threshold is breached if the BPCG impact test fails for the day.
- Start-up – Bids are replaced for all hours if the generator failed the load pocket or statewide energy price impact test in any one hour or if the BPCG payment impact test fails for the day.
- Minimum generation – Bids are mitigated for all committed hours or the duration of the minimum run time, whichever is longer, if the generator failed the load pocket or statewide energy price impact test in any one hour, or if the BPCG payment impact test fails for the day.

[6] AMP III In-City mitigation may also be referred to as "Constrained Area mitigation".

4.0 Analysis

4.1 Day Ahead ConEd Mitigation

The revised market monitoring and mitigation procedures approved by FERC's May 31, 2002 FERC order implemented two changes to the original ConEd New York City mitigation measures. First, the congestion trigger threshold was increased from 105% to 107% to ensure that mitigation triggering occurred based primarily on congestion, and not on minimal congestion combined with losses. This modification was effective in protecting generation from unwarranted mitigation in some scenarios. However, the actual change in the amount of mitigation was small after raising the percentage because generators still only needed to exceed the threshold for one hour to invoke mitigation for all hours.

The second change implemented on June 1, 2002 for the ConEd Measures expanded the list of units subject to the In-City mitigation measures to include all In-City units and to more accurately calculate reference prices by replacing the original reference level of fuel plus $1 with the state-wide reference levels used for the NYISO mitigation measures, which are based on 90 day accepted offers or full marginal cost calculations. This modification ensured that all units that could potentially exercise market power in NYC were assessed for mitigation using a more accurate reference level, and mitigation, if appropriate, was applied using a more accurate default bid.

Overall, the ConEd Measures for the Day-Ahead Market continued to be the most stringent mitigation applied to the NYISO's Day-Ahead Markets. Between June 1, 2002 and April 30, 2004, at least one generator was mitigated on 99.6% of all possible days. There were only 3 days in this time period that no generator was mitigated by the ConEd Measures.

The high frequency of mitigation was expected, based on the tight thresholds used by the ConEd Measures combined with the high rate of units failing the reference bus price test. Congestion into the New York City zone is common in the NYISO Day-Ahead Market, leading to many occasions on which the LBMP at a generator's location would exceed the LBMP at the reference location by at least 7%. MMP's studies show that this "trigger" was exceeded for an average of 19 hours per day. Given that the triggering of mitigation for one hour subjected a generator to mitigation for all hours, mitigation was common under this implementation and not significantly less than the period where the trigger was 5%.

MMP also found that a substantial number of MWs bid day ahead in NYC were mitigated because of the lack of a conduct threshold (bid only needed be above reference), and reference levels based on fuel costs.

The end result of the high frequency of conduct and triggering was a high total number of unit-hours of mitigation. Figure 1 illustrates that as much as 70% of the unit-hours of scheduled generation in NYC were mitigated during peak periods, and approximately 50% of the unit-hours of scheduled generation were mitigated overall.

4.1.1 Impact on LBMP

Mitigating units on a daily basis, as specified by the ConEd Measures, will have an impact on the LBMP. MMP has the capability to capture the LBMP during the SCUC solution just before the mitigation, and again just after mitigation, which provides a unique look at the effect of the mitigation on the LBMP. MMP sampled 44 random days between June 1, 2002 and April 30, 2004 to analyze the impact of the ConEd Measures on LBMP. The average LBMP in NYC zone is reduced $5.70 due to mitigation, or 8.4%. The LBMP change in other zones is minimal (it is possible for the LBMP to increase or decrease in other zones because mitigation in NYC may commit new generation and create a new statewide solution). Figures 2 and 3 plot the change in LBMP as a result of mitigation for NYC zone and all zones for the latter 24 days sampled by MMP.

4.1.2 Impact on Total Load Cost

Using the same sample, the impact of the ConEd Measures on the total load cost is an average decrease of 4.1% for the New York Control Area. The majority of this savings is realized in the NYC zone, since NYC is the area with the greatest reduction in LBMP after mitigation. While the NYC zone always realized a savings in load cost, it was possible for other zones (and therefore the control area as a whole) to experience increases in load costs after mitigation due to the potential of relieving congestion and subsequent new SCUC solution. However, studies showed that this increase occurred only rarely under the ConEd Measures. Figure 4 shows the total load cost for the NYCA before and after mitigation for 19 random study days.

4.1.3 Impact on Generator Revenues

If there are LBMP changes due to mitigation, and total load cost changes, there will also be an impact on the generator revenues. Once again, averaging several random days of MMP studies of the ConEd Measures finds that the average reduction in generator revenues across the New York Control Area is 2.3%. Figure 5 illustrates a zonal breakdown of average daily generator revenues before and after mitigation. The Hudson Valley and West zones are the only zones that experienced an increase in generator revenues after the mitigation occurred.

4.1.4 Additional Impacts of Mitigation

The ConEd Measures had various other effects on New York's energy markets. Analyzing the same random study days finds that imports decreased and exports increased after mitigation. This is a result of the LBMP changes and availability of more economically attractive megawatts in New York City after mitigation. These changes also resulted in slight adjustments in the amount of price-capped load bids and virtual trades that were scheduled in the Day-Ahead Market. MMP also believes that scheduling more units in the bid pass of SCUC reduced the need to schedule units in the day-ahead Local Reliability (LRR) pass of SCUC, which minimized uplift payments. This will be further discussed in the AMP III section, where changes were observed in the LRR commitments when switching to the conduct-and-impact Constrained Area mitigation.

4.1.5 Summary of ConEd Measures

Overall, the ConEd Measures worked as designed, and were effective in reducing market power. The inflexible and restrictive nature of this mitigation plan, however, resulted in a

high frequency of mitigation, and mitigated LBMPs that would not have been deemed to warrant mitigation under the selective and flexible conduct-and-impact approach to market power mitigation. For this reason, the Comprehensive Mitigation Measures filing, with the wide-spread support of the Market Participants, proposed replacing the ConEd Measures with full conduct and impact based mitigation for In-City generation beginning on May 1, 2004, to ensure a more selective process to mitigate potential market power.

4.2 AMP II Mitigation

The revised market monitoring and mitigation procedures approved in FERC's May 31, 2002, order altered the original statewide AMP by adding a portfolio exclusion for generator bidding and providing additional hourly and zonal selectivity. The addition of the 50 MW portfolio test provided a "safe harbor" for the mitigation of a single MW under AMP I that occurred twice in 2001 (AMP I mitigated a total of four times in 2001).

AMP II did not mitigate between June 1, 2002 and April 30, 2004 because both conduct and the necessary impact were not found together on days in which the $150 arming trigger was exceeded. The following table summarizes AMP II activity for the time frame AMP II was in effect.

Table 1 – Statewide Day-Ahead AMP II Mitigation Activity, June 1, 2002 to April 30, 2004

Year	Number of Days Armed	Number of Days w/Conduct	Number of Days w/Impact
2002	21	13	0
2003	21	16	0
2004	8	3	0
Total	50	32	0

The "number of days armed" indicates the number of days when an LBMP in at least one zone exceeded the $150 threshold. This prompts the SCUC program to test for market power. The "number of days w/conduct" indicates that at least one generator failed the conduct test in the armed zone(s), including the portfolio test, on the days of arming only. This resulted in 32 days in which SCUC continued to test for an LBMP impact greater than the $100 threshold.

4.2.1 Analysis of the AMP II Results

The LBMP impact never exceeded the $100 threshold under AMP II. In fact, only one of the 32 days was even close to a mitigation action, when the LBMP impact was found to be exactly $100 in the NYC zone for one hour (in which the lower Constrained Area thresholds were not applicable) on March 3, 2003.

There are several reasons why impact was not sufficient to trigger mitigation. First, prices that exceeded the $150 arming threshold were often only slightly above that threshold, and usually only during peak periods. For example, a $165 LBMP in a given zone is highly unlikely to correlate with an LBMP drop to $64.99 or less as a result of mitigation during a peak period based on testing for an impact greater than $100, since the supply curve legitimately produces higher LBMPs as the load approaches peak levels. If a high price was

instead a result of egregious market manipulation, AMP would have found a higher level of impact and mitigated appropriately. Thus, the impact test was seen to fulfill its function of distinguishing legitimately high prices from high prices resulting from market power.

A second reason why impact was not found is the advent of virtual trading and price capped load bidding in the DAM. Virtual bids and price capped load bids facilitate market entry in response to price increases and add elasticity to the markets, and as a result provide many more options in the day-ahead SCUC solution if generation bids increase.

The portfolio exclusion did not significantly reduce the amount of MW considered for mitigation. MMP believes it is unlikely that the few additional megawatts of generation failing conduct that were not considered for mitigation would have resulted in mitigation on the 50 armed days, for the reasons mentioned above. The possible exception is the March 3, 2003 Day-Ahead Market, when the impact test was right at the mitigation threshold, as described above. MMP still believes that the portfolio exclusion is a desirable enhancement.

4.2.2 Summary of AMP II Mitigation

AMP II mitigation between June 2002 and April 2004 worked as designed and met its goals. AMP II clearly did not overmitigate, as it did not mitigate at all. Instead, MMP believes that AMP distinguishes between market power and scarcity and is selective in the mitigation of market manipulation. MMP found no evidence that AMP should have mitigated on any of the 50 days where AMP armed. Nonetheless, the AMP remains an important safeguard, should conditions permitting an exercise of market power arise. The MMP found no evidence that the statewide conduct and impact thresholds should be changed.

4.3 AMP III Mitigation

Beginning May 1, 2004, the ConEd Measures were replaced with conduct and impact mitigation as part of the AMP III deployment. This significantly reduced the overall amount of mitigation in NYC, and the market impacts changed correspondingly. The statewide AMP process remained in effect and added Start-Up, Minimum Generation, and Bid Production Cost guarantee (BPCG) payment mitigation. However, no statewide mitigation has occurred under AMP III in the May 1, 2004 to September 30, 2004 period. It should be noted that the assessment and analysis of the new In-City mitigation has become more complex because of the interaction of the load pockets, different types of impact, and the "no-harm" test, which evaluates each instance of In-City mitigation to ensure mitigation should be imposed.

The frequency of In-City mitigation under AMP III, in number of days, is far less than under the previous ConEd Measures. In-City mitigation occurred on 105 out of 153 market days between May 1, 2004 and September 30, 2004, whereas the ConEd measures mitigated almost every day before May 1. The hourly rate of mitigation is even lower less and is discussed below. Table 2 captures the reason for mitigation or non-mitigation for only the AMP III Constrained Area mitigation applied to the In-City Day-Ahead Market.

Statewide arming has occurred only twice since AMP III started, due to a mild summer, and no energy or guarantee payment impact was found on either occasion. As a result, no statewide energy, start-up, or minimum generation mitigation occurred during AMP III operation.

Table 2 – In-City Day-Ahead Mitigation, Summer 2004

Scenario	Number of Days
Total Days: 5/1/2004 - 9/30/2004	153
Load Pocket Arming	151
Load Pocket LBMP Impact Only	12
BPCG Payment Impact Only	24
Load Pocket and BPCG Payment Impact	110
No Impact	5
No Harm Test Accepts Mitigation	105
No Harm Test Rejects Mitigation	41

Similar to statewide mitigation, In-City mitigation begins with arming and conduct. In any hour in which the Shadow Price test shows that a load pocket is subject to transmission congestion, the New York City generators are subject to lower conduct thresholds than the threshold that applies statewide. The NYISO has identified nine load pockets, with some load pockets overlapping or nested inside other load pockets. A load pocket becomes "armed" when a transmission facility affecting that pocket is congested. Table 3 below lists the load pockets and the rate at which they are "active".

Table 3 – Frequency of In-City AMP Activation, Day-Ahead Market, Summer 2004

Load Pocket	Frequency of Activation
Astoria East/Corona/Jamaica	6%
Astoria West Queensbridge	16%
Astoria West Queensbridge/Vernon	23%
Dunwoodie - South	50%
East River	0%
Greenwood Staten Island	14%
In-City 345/138	76%
Vernon - Greenwood	0%
Staten Island	0%

The reduced frequency of mitigation, reduced threshold for evaluating bids, and additional selectivity of load pocket mitigation relative to the ConEd Measures has reduced the total number of unit-hours of mitigation. Figure 1 illustrates that roughly 10% of the unit-hours of scheduled generation in NYC were mitigated, opposed to 50% under the previous ConEd Measures.

4.3.1 Impact on LBMP

MMP has the capability to capture the LBMP during the SCUC solution just before the mitigation and again just after mitigation. MMP sampled 25 random days after the deployment of In-City Constrained Area mitigation to analyze the impact of the In-City mitigation on LBMP. The average LBMP in NYC zone is reduced $2.12 due to mitigation, or 3.2%, which is less than half the average decrease seen from the ConEd Measures mitigation data. A second finding from studying the LBMP changes under AMP III mitigation is that there is a slightly greater likelihood that LBMPs will increase in other zones as a result of mitigation in NYC zone. As stated earlier, it is possible for the LBMP to increase or decrease in other zones because mitigation in NYC may commit new generation and create a new statewide solution (SCUC minimizes total production cost, not LBMP). Figures 6 and 7 plot the change in LBMP as a result of mitigation for NYC zone and all zones for the latter 24 days sampled by MMP.[7]

4.3.2 Impact on Total Load Cost

The impact of In-City mitigation on the total load cost is an average decrease of 1.4% for the New York Control Area, as compared to the 4.1% under the previous mitigation rules. The NYC zone savings is larger, at 3.3%, since NYC is the area with the greatest reduction in LBMP after mitigation. While the NYC zone always realized a savings in load cost, it was possible for other zones (and therefore the control area as a whole) to experience increases in load costs after mitigation due to the potential of relieving congestion and subsequent new SCUC solution. At the same time, the design of SCUC should ensure that the total state-wide production costs decrease whenever mitigation occurs. Studies showed that this occurred more frequently with Constrained Area mitigation than with the ConEd mitigation, with 3 of 12 days studied experiencing a very slight increase in total load costs. This will be further analyzed in the discussion of the no-harm test.

4.3.3 Impact on Generator Revenues

Constrained Area mitigation also has less of an impact on generating revenues than the previous mitigation. Averaging several random days of MMP studies finds that the average reduction in generator revenues across the New York Control Area is 1.3%. Figure 8 illustrates a zonal breakdown of average daily generator revenues before and after mitigation. Of the zones outside of NYC, Long Island experienced an increase in generator revenues after AMP In-City mitigation occurred.

4.3.4 Additional Impacts of Mitigation

AMP III Constrained Area mitigation, like its predecessor, has impacts that reach to other segments of New York's markets, including similar shifts in imports, exports, and virtual bids (though to a lesser extent). One of the most notable changes since the AMP III implementation is an increase in uplift payments to generators, particularly related to Day-Ahead commitments for ConEd Local Reliability Rules (LRR). Since there is much less mitigation in the initial pass of the SCUC program, many generators do not appear as economically attractive and therefore fewer generators in NYC are committed to meet the

[7] There are occasions, such as July 31, 2004, where the LBMP increases over the course of the day, even in the mitigated zone (in this case NYC). In this event, the no-harm test will reject the mitigated solution.

bid load. This will be recognized in the LRR pass of SCUC and more generators will be committed for reliability. Comparing August 2004 to August 2003 in particular shows that the number of unit hours committed for LRR more than tripled. The increase in reliability payments can be seen in figure 9. These payments are a function of In-City local reliability requirements, however, and do not indicate a need to change the mitigation measures.

A second change worth noting is that the reduction in Day-Ahead mitigation has caused a slight increase in real-time mitigation. This will be further discussed in the real-time mitigation section.

4.3.5 Analysis of the No-Harm Test

A final point of analysis for the AMP III mitigation is the "no-harm" test. The no-harm test is included in the mitigation measures and is designed to ensure that mitigation in the zone does not cause the overall cost per megawatt in that zone to increase, and thus "harm" the markets. This test, which was not included in the ConEd Measures, was included in the previous statewide AMP, but the lack of mitigation in AMP II negated any need to run a no-harm test.

The no-harm test rejected the mitigated solution 28.1% of all days where SCUC produced a mitigated solution for the In-City Day-Ahead Market since May 1, 2004. In other words, mitigation caused the total cost in NYC zone to increase about a quarter of the time. This is possible because of intrazonal congestion and the dynamics of the constrained NYC area.

4.3.6 Summary of AMP III Mitigation

MMP finds that the new AMP III mitigation has worked reliably and as designed for the first five months of operation. The mitigation was more selective and targeted only specific potential abuses of market power in Constrained Areas by bringing In-City generators into the conduct and impact environment. The dynamics of the congested New York City area can create new SCUC solutions that will increase costs for the In-City loads, but there are protections to disallow these solutions. As a result, while MMP continues to closely monitor Constrained Area mitigation, no scenarios of "overmitigation" or "undermitigation" were evident. Additionally, MMP finds that the statewide portion of AMP III accurately evaluated the need for mitigation – but did not impose mitigation - on the two occasions where AMP was armed in the SCUC program.

4.4 Real-Time Mitigation

The revised market monitoring measures approved by FERC's May 31, 2002 order established the modeling of real-time load pockets with a conduct and proxy impact test. This enabled MMP to implement NYC real-time mitigation in June 2002 on a partially automated basis. In December 2002, MMP fully automated the NYC real-time mitigation.

The New York City load pocket and sub-pockets exhibit a significant degree of market concentration during hours when the applicable transmission constraints are binding. As a result, real-time In-City mitigation occurs nearly every day with only rare exceptions, because over the course of the day, there are many opportunities for at least one generator in

some interval to have an LBMP that exceeds the value of the load pocket threshold in which that generator is located. However, because mitigation is applied on an interval-by-interval basis rather than for a day as a whole, the actual percentage of unit-hours mitigated for scheduled generators is only around 20% for 2004 (through September 30). The history of scheduled and mitigated unit-hours since June 2002 appears in Figure 10. A few trends are clear in this chart. First, real-time mitigation was most frequent after its initial deployment, and second, mitigation was more frequent during peak periods, as expected. It is also evident that real-time mitigation increased somewhat after the deployment of the new day-ahead AMP III mitigation. The reason for the increase is that fewer units were mitigated day-ahead under AMP III than under the previous ConEd Measures, and as a result more units are subject to mitigation in the real-time markets (mitigated day-ahead bids would be carried forward to the Real-Time Market, so units are only subject to real-time mitigation if they have not already been mitigated in the Day-Ahead Market).

The current implementation of the real-time In-City mitigation does not provide an opportunity to capture prices before and after mitigation, and therefore does not allow the same type of analyses as the day-ahead mitigation programs. However, the market impacts are closely monitored and real time mitigation has shown trends in various aspects of the markets.

4.4.1 Impacts of Mitigation

Figures 9 and 11 illustrate two notable changes in New York's energy markets that can be directly attributed to the modeling of real-time load pockets in the power system software deployed in June 2002. First, figure 11 shows that there was a clear reduction in the number of out-of-merit calls, most of which were in New York City. This was because the lower bids resulting from mitigation caused units to be scheduled economically that otherwise would have to be called as out-of-merit units. The second, figure 9, illustrates the corresponding reduction in the real-time BPCG payments.

Real-time mitigation's impact test carries mitigation forward one to three hours depending on the timing of the BME market closings. This feature was intended to minimize GT starts and stops driven by mitigation, but occasionally created LBMPs that rapidly increased and decreased (resembling a "sawtooth" effect). MMP anticipates that this effect will disappear when the February 1, 2005 SMD2 is on-line and the proxy impact test is replaced with actual impact tests within the commitment software.

4.4.2 Summary of Real-Time Mitigation

MMP believes that the current real-time mitigation procedure achieved its goals and provided automated mitigation within the real-time software, and produced results that are consistent with the design of the conduct and impact approach to mitigation. However, the forthcoming real-time mitigation under SMD2 will continue to align real-time mitigation with the full conduct and impact tests now in place throughout the Day-Ahead mitigation programs, without the need to use the current proxy impact test. The MMP intends to continue monitoring and assessing the results of real-time mitigation after full SMD2 implementation has been achieved. The MMP believes that such assessments after SMD2

has been implemented will provide better guidance on the continued implementation of real-time mitigation than analysis of mitigation results prior to SMD2.

5.0 Consideration of Load Pocket Thresholds

This section discusses the application and efficacy of the load pocket threshold (LPT) as derived from the formula in Section 3.1.2 b) (1) of Attachment H of the Services Tariff for use in an area designated as a Constrained Area, such as New York City. The formula

$$LPT = \frac{2\% * \text{Average Price} * 8760}{\text{Constrained Hours}}$$

provides a limit above an offeror's Reference Level beyond which the price of the MW offered will be considered anti-competitive. That offer price will be reset to the reference level if it has a market impact. For convenience in this report, we use the term "2% level" to refer to the policy that set the formula and also to the LPT derived from the formula. FERC noted in its 31 May 2002 order that "a two percent threshold balances the need for flexibility for generators bidding in constrained areas to reflect legitimate changes in marginal costs and the need to prevent undue exposure of the market to locational market power." (page 27)

While there have been three summers and two winters during which the 2% level has been in effect, changing circumstances – discussed below – and the transition to SMD2 limit the utility of an analysis of mitigation results within the Day-Ahead and real-time models for Constrained Areas at this point. Nevertheless, based on experience with In-City mitigation, as discussed elsewhere in this report, the MMP believes that the considerations and analysis leading to the adoption of the 2% were valid, and that the above formula constituted an appropriate basis for the initial implementation of Constrained Area mitigation. Looking forward, this report will address certain issues of changes in marginal costs, and also offer some insights on the issue of exposure to sustained market power, that may warrant further evaluation of the level of the Constrained Area threshold formula.

Factors limiting assessment of the 2% level include:

- From 1 June 2002 to 1 May 2004, LPTs were modeled in NYC only for real-time.
- From 1 June 2002 through to the present, impact has been determined in SCD for the Real-Time Market by a "proxy" impact test: there was deemed to be impact if a conduct-failing resource was scheduled in the previous interval, and the sum of the shadow prices going into the pocket exceeded the LPT, or if not scheduled, the reference level of the unit is below the price of the marginal unit by an amount more than the LPT. The NYISO has not had the ability in SCD to do price comparisons between an as-bid and an as-mitigated dispatch. Under SMD2, a full impact test for automated real-time mitigation will be implemented.

- While LPTs are now modeled in the DAM as well as in real-time, the two models are still different because of the different software used in the markets; the SCUC solves by modeling the lines that define the load pockets, while SCD incorporates an explicit assignment of units to pockets.

The three factors listed in the bullets above have made it difficult to assess the performance of the Day-Ahead and Real-time AMP as a fully integrated set of screens. The SMD2-based improvements, however, will bring DAM and RTC mitigation into a consistent and seamless process. The need for any future refinements in mitigation should therefore be based on an evaluation of SMD2 experience. In the meantime, there are some issues with respect to the 2% level that can be discussed and considered further in the stakeholder process. In the remainder of this section, MMP offers its views on the key considerations that should guide assessment of the 2% threshold level.

5.1 Intent of the Threshold

The intent of the LPT is similar to the intent of the thresholds in statewide mitigation: appropriately limiting the ability of generators to exercise market power, while avoiding undue interference in the market when some operational or fuel issues might be driving a legitimate increase in competitive offer prices. The difference between the LPTs for NYC and the statewide thresholds is that in NYC the transmission system constraints result in the market becoming concentrated in a large number of hours in the year. With that concentration comes a potential ability to exercise market power on a sustained basis. The LPT formula is designed to limit suppliers' offering flexibility the more often the system is constrained.

The 2% threshold translates to real-time LPTs that currently range from $2.67 in the most-often constrained area to $13.60 at the NYC-wide level. The numbers represent a conduct / impact range within which an offer will not be subject to mitigation even if a particular pocket in which a generator resides is constrained. When there are no constraints within or into NYC, conduct / impact testing reverts to statewide thresholds. Because of the frequency and extent of transmission constraints, more aggressive intervention is necessary in NYC to ensure a competitive outcome, since market power can be exercised on a sustained basis. The tighter triggers resulting from the 2% threshold are intended to ensure that an attempt to exercise market power will not result in increases in the cost of power over the course of a year that depart significantly from competitive levels.

At the same time, the tightening of the LPT is self-limiting. There are at least three situations that can reduce the frequency of constraints and cause the LPT eventually to rise: an increase in generation in the constrained areas, an increase in transmission capability within NYC or between NYC and the rest of the NYCA, and increasingly competitive offering behavior by suppliers in the Constrained Area. For example, at a $50 / MW average price along with the 2% threshold, as the number of constrained hours falls below 90, the LPT approaches the statewide $100 threshold.

Experience over the past 2+ years has convinced MMP that the intent of the LPT remains valid. The LPT sends a signal that certain offering behavior is within the bounds of competitiveness, and there is a bright-line demarcation for non-competitive behavior. However, it is appropriate to assess the percentage value in the LPT formula in the light of experience gained in the NYC market, changing market conditions, and the AMP improvements associated with the advent of SMD2 .

5.2 The Role of the LPT in Accommodating Changing Market Conditions

The NYC LPTs are significantly tighter than the statewide thresholds because of the extent of transmission constraints in NYC. It is important to note that the LPT applies both to conduct and impact in recognition of the fact that conduct in a relatively small active pocket is virtually synonymous with impact.

Analysis of offer prices does not indicate any systematic change in behavior in response to changes in the LPTs, leading MMP to think that suppliers are not crafting their offers with the LPTs in mind, but ideally are crafting offers to reflect their short-run marginal costs, or possibly – with offers $90-$99 in excess of reference levels—with the intent of exploiting the statewide thresholds when there are no constraints into NYC.

Fuel volatility represents perhaps the most common market condition that MMP monitors for potential conflicts with the real-time LPTs. The statewide thresholds are large enough to encompass fairly large swings in fuel prices. When those swings have been larger than anticipated, MMP has implemented rapid response fuel adjustment procedures to prevent mitigation to levels below marginal costs. The challenges of the real-time thresholds are two: to incorporate information on fuel volatility rapidly enough into the reference levels to prevent undue mitigation, and to obtain the real-time fuel information in the first place.

For kerosene, #2 oil, and #6 oil, price information from the previous day generally applies to real-time prices as well, and MMP concludes that there is not much risk that changes in these three fuels would be larger than the LPTs. (Since DAM reference levels are automatically adjusted for fuel prices the LPTs for the DAM should not pose difficulties. Nonetheless, while fuel prices are incorporated as rapidly as possible, there may still be a one day delay.)

Gas prices are more problematic, since there is virtually no real-time pricing information available. MMP has examined the daily price volatility of gas and notes that when the price swings are translated into price / MW equivalents, the volatility may be larger than some LPTs computed with the 2% threshold. To the extent that the LPTs do not encompass such volatility, there is a risk of over-mitigation when prices are rising, and under-mitigation when prices are falling.

While this concern may favor a change in the 2% threshold, MMP, the Market Advisor, and stakeholders should consider all consequences of such a change, whether a change would yield appropriate outcomes, and whether prices in NYC are consistent with the initial assessment of the frequency with which consumers might be exposed to an exercise of

market power. MMP has not completed a full analysis of the price volatility of fuels. Such analysis would include not only summary measures such as ranges, medians, and quartiles, for example, but also a consideration of the seasonal patterns of volatility. These and other factors would inform market participants in their deliberations on the efficacy of the 2% threshold.

5.3 The 2% Threshold Issue as a Barrier to Entry or Incentive to Exit

There is little or no evidence to date that the 2% threshold serves as a barrier to entry. In fact, new capacity has come on line since the advent of the LPTs, and other new capacity is due very soon. For example, since the Comprehensive Measures have been in place, Ravenswood 4, a 270 MW unit, has entered into commercial service. For 2005, the East River repowering project of 288MW will exceed the retirement of the Hudson Avenue 10 at 65 MW. Finally, the Poletti expansion will temporarily add 500 MW of capacity to NYC starting in 2005, although the current Poletti plant will be retired three years after the new one comes online.

As stated above, there are several changes in market conditions that will cause the thresholds to increase as the number of constrained hours decreases over time. As transmission and generation capacity comes on line, the number of constrained hours will decrease and the LPTs correspondingly increase. Even under fully competitive conditions, moreover, the most efficient units will capture LBMP revenues above their marginal costs in the hours when pockets are active and more costly units are required to be dispatched.

In addition, one of the features of the Mitigation Measures that was designed in the context of the 2% threshold was a reference level floor for new units. In recognition of the fact that the scenario of increasing thresholds may take time to play out, the Mitigation Measures provide for development of a reference level for new units that reflects LBMPs at the times when such units are most likely to run. Although still subject to mitigation, the new unit would be able to craft offers that allow it the advantage, for a specified period, of those price levels.

Some Market Participants have argued that the 2% threshold may be not only a barrier to entry, but also an incentive to exit. MMP has not seen any evidence of such retirements. Indeed, some units that are being retired will be replaced by others, and some are being repowered.

In sum, the foregoing factors lead the MMP to conclude that the Constrained Area LPTs are not posing a barrier to entry or an incentive to exit.

5.4 The 2% Threshold as a Sustainable Increase Above a Competitive Outcome

The LPT threshold is intended to limit the maximum sustainable increase over a competitive outcome if suppliers exercise market power by consistently setting prices at the maximum permitted by the LPT. At present, the ability of Market Participants to shift purchases or

sales between the Day-Ahead and Real-Time Markets, coupled with various kinds of price-responsive load and virtual trading, serves to mitigate such market power.

As a result, MMP, in consultation with the Market Advisor, plans to analyze accepted offers and outcomes to assess whether a higher percentage level would be sufficient to keep In-City price increases attributable to market power within acceptable bounds. This analysis, in combination with an assessment of fuel price volatility and the procedures for tracking fuel price changes in reference levels, and an understanding of market conditions and the implementation of mitigation measures in SMD2, should enable the NYISO, the Market Advisor and the stakeholders to make an informed judgment about continuation or change of the 2% threshold under SMD2 mitigation.

6.0 Concluding Remarks

The revised market monitoring and mitigation measures approved on May 31, 2002 provided an opportunity for Market Monitoring to improve the original mitigation procedures based on experience with the first version of the mitigation programs. This revision has helped mitigation in New York evolve from more rigid mitigation under the ConEd Measures to full conduct and impact mitigation for both Day-Ahead In-City and Day-Ahead statewide mitigation. A full conduct and impact approach will also be in effect for the Real-Time Markets as part of the SMD2 deployment on February 1, 2005.

The analysis of the ConEd Measures and AMP In-City mitigation programs shows that the improvements and evolution to achieve the latest design have improved the selectivity of congestion-based mitigation, while still mitigating market power. This has also increased the likelihood that mitigation will only take place in response to an exercise of market power and not under scarcity conditions.

The statewide AMP has not mitigated any generation during the time period analyzed in this report, but Market Monitoring is confident that AMP is continually and reliably testing for market power when prices rise above $150/MWh. Through analyzing the days where prices did exceed the threshold, MMP finds that the statewide AMP can accurately determine the difference between high prices resulting from legitimate market forces as opposed to misuse of market power. The AMP imposes mitigation only during instances of market power or manipulation, and thus remains a important safeguard against price manipulation if conditions permitting an exercise of market power should arise. Correspondingly, conduct and impact mitigation allows prices to rise when bids are legitimately at high levels. For example, during the summer of 2004, prices in the DAM rose to $175 without being mitigated.

Real-time In-City mitigation has also achieved its goals of mitigating market power under constrained conditions. Based on experience in the Day-Ahead Markets, MMP believes that a move to the full conduct and impact real-time mitigation on February 1, 2005 will help ensure that mitigation only occurs during appropriate circumstances.

Market Monitoring is continually improving its ability to capture mitigation data and analyze the effects of mitigation, and will continue to propose measures to improve and fine-tune the market monitoring and mitigation procedures where necessary to ensure competitive markets.

Figure 1

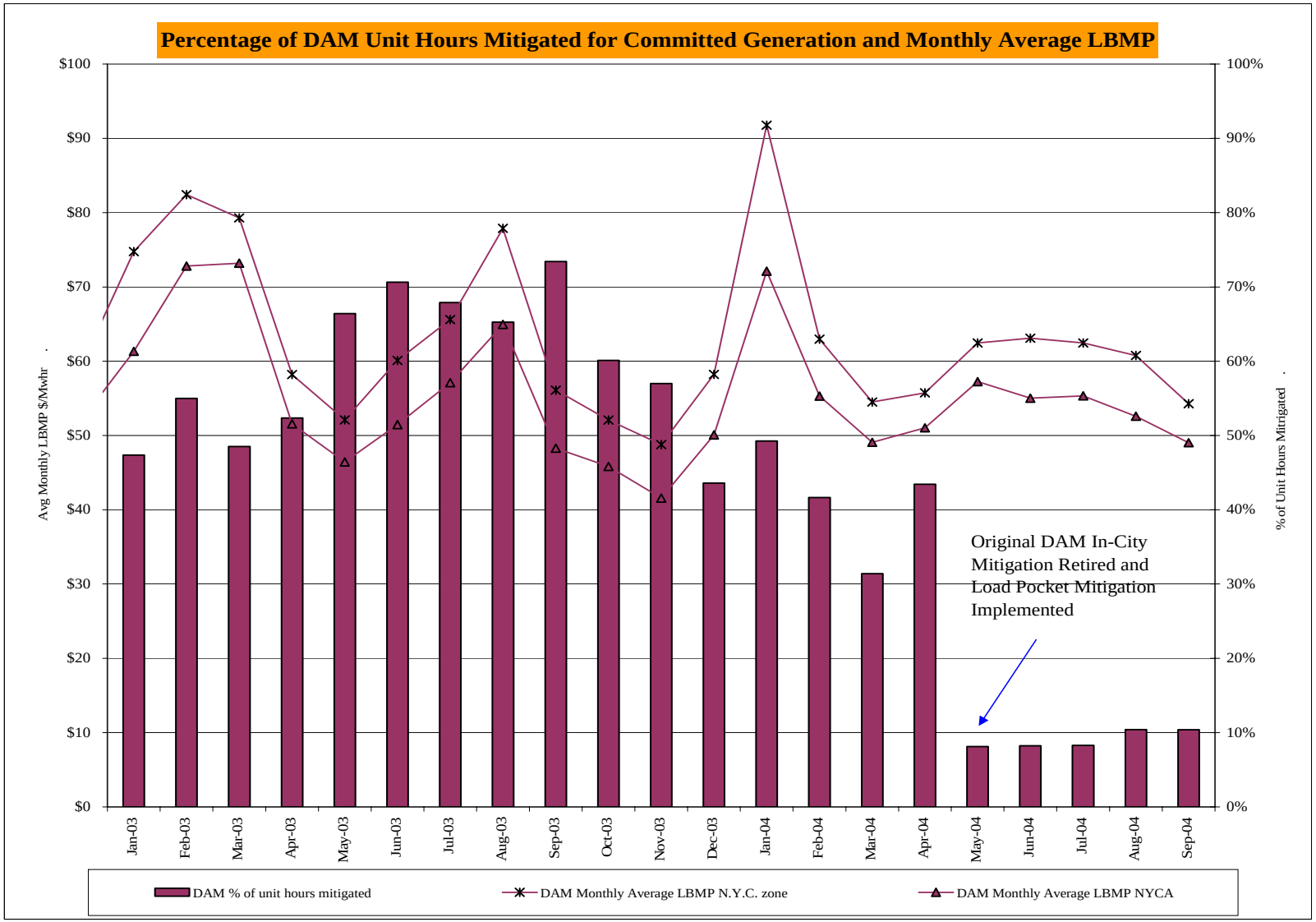

Percentage of DAM Unit Hours Mitigated for Committed Generation and Monthly Average LBMP
Avg Monthly LBMP $/Mwhr
% of Unit Hours Mitigated
$100
$90
$80
$70
$60
$50
$40
$30
$20
$10
$0
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Jan-03
Feb-03
Mar-03
Apr-03
May-03
Jun-03
Jul-03
Aug-03
Sep-03
Oct-03
Nov-03
Dec-03
Jan-04
Feb-04
Mar-04
Apr-04
May-04
Jun-04
Jul-04
Aug-04
Sep-04
Original DAM In-City Mitigation Retired and Load Pocket Mitigation Implemented
DAM % of unit hours mitigated
DAM Monthly Average LBMP N.Y.C. zone
DAM Monthly Average LBMP NYCA

Figure 2

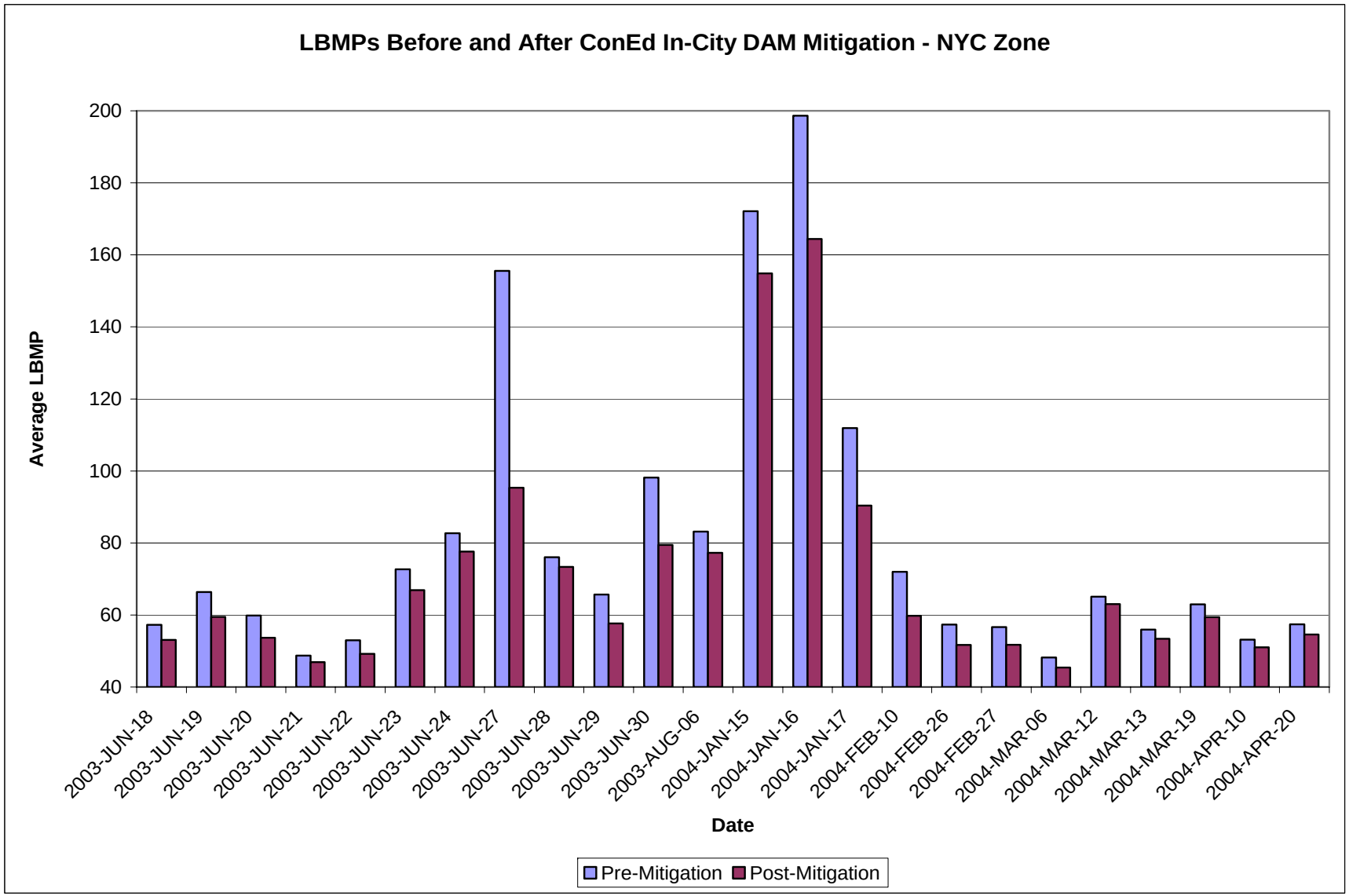

LBMPs Before and After ConEd In-City DAM Mitigation - NYC Zone
Average LBMP
200
180
160
140
120
100
80
60
40
2003-JUN-18
2003-JUN-19
2003-JUN-20
2003-JUN-21
2003-JUN-22
2003-JUN-23
2003-JUN-24
2003-JUN-27
2003-JUN-28
2003-JUN-29
2003-JUN-30
2003-AUG-06
2004-JAN-15
2004-JAN-16
2004-JAN-17
2004-FEB-10
2004-FEB-26
2004-FEB-27
2004-MAR-06
2004-MAR-12
2004-MAR-13
2004-MAR-19
2004-APR-10
2004-APR-20
Date
Pre-Mitigation
Post-Mitigation

Figure 3

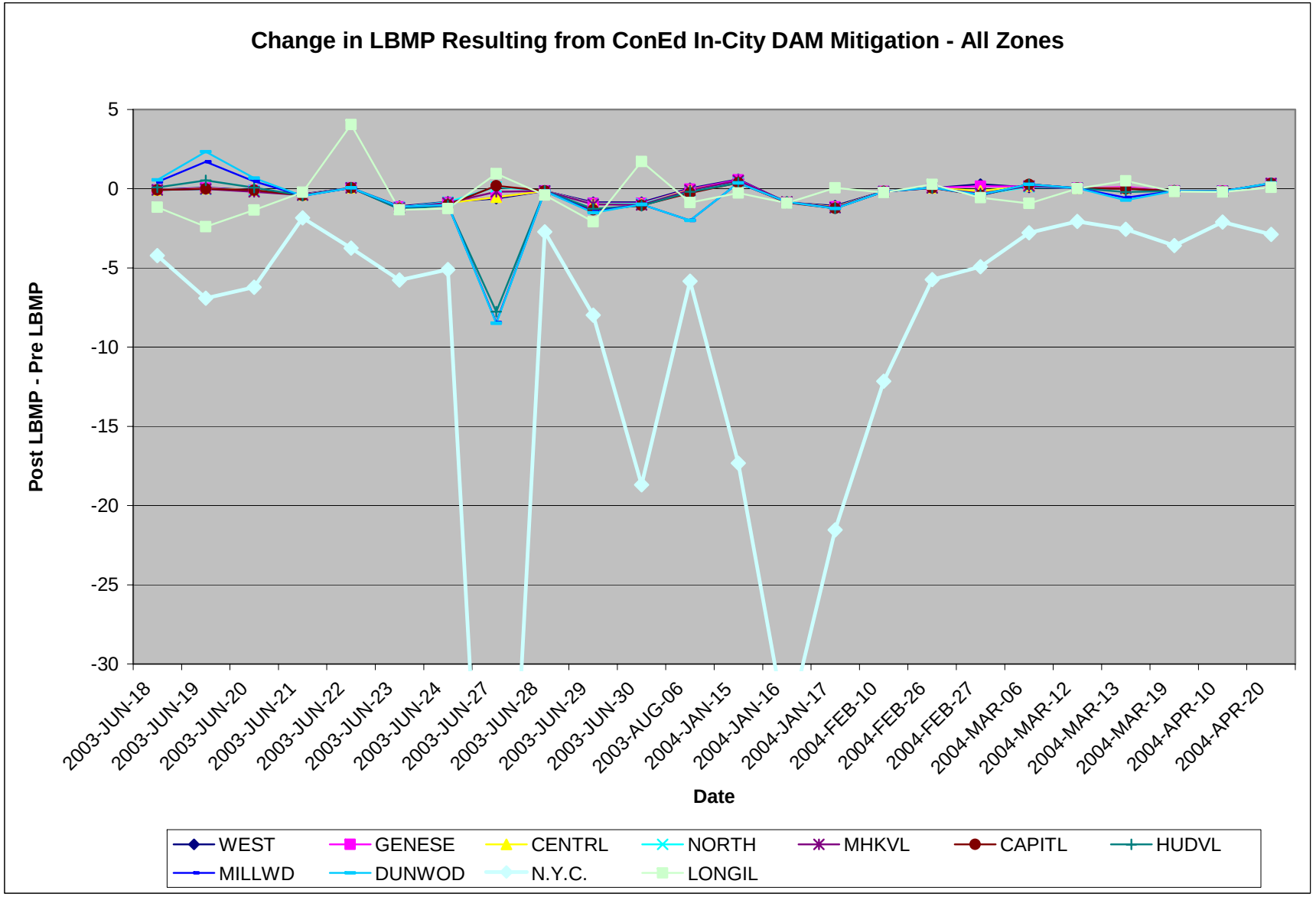

Change in LBMP Resulting from ConEd In-City DAM Mitigation - All Zones
Post LBMP - Pre LBMP
5
0
-5
-10
-15
-20
-25
-30
2003-JUN-18
2003-JUN-19
2003-JUN-20
2003-JUN-21
2003-JUN-22
2003-JUN-23
2003-JUN-24
2003-JUN-27
2003-JUN-28
2003-JUN-29
2003-JUN-30
2003-AUG-06
2004-JAN-15
2004-JAN-16
2004-JAN-17
2004-FEB-10
2004-FEB-26
2004-FEB-27
2004-MAR-06
2004-MAR-12
2004-MAR-13
2004-MAR-19
2004-APR-10
2004-APR-20
Date
WEST
GENESE
CENTRL
NORTH
MHKVL
CAPITL
HUDVL
MILLWD
DUNWOD
N.Y.C.
LONGIL

Figure 4

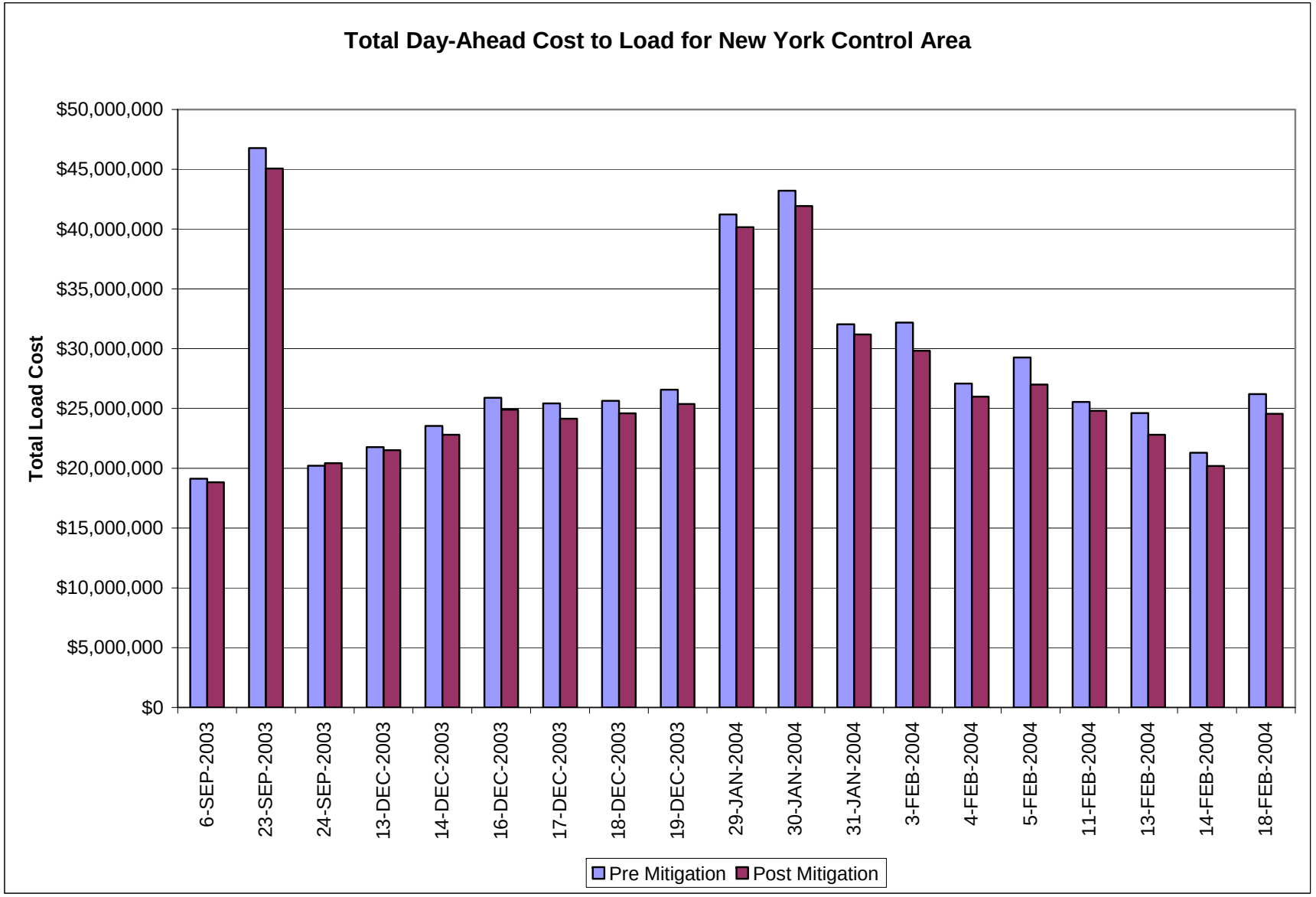

Total Day-Ahead Cost to Load for New York Control Area
Total Load Cost
$50,000,000
$45,000,000
$40,000,000
$35,000,000
$30,000,000
$25,000,000
$20,000,000
$15,000,000
$10,000,000
$5,000,000
$0
6-SEP-2003
23-SEP-2003
24-SEP-2003
13-DEC-2003
14-DEC-2003
16-DEC-2003
17-DEC-2003
18-DEC-2003
19-DEC-2003
29-JAN-2004
30-JAN-2004
31-JAN-2004
3-FEB-2004
4-FEB-2004
5-FEB-2004
11-FEB-2004
13-FEB-2004
14-FEB-2004
18-FEB-2004
Pre Mitigation
Post Mitigation

Figure 5

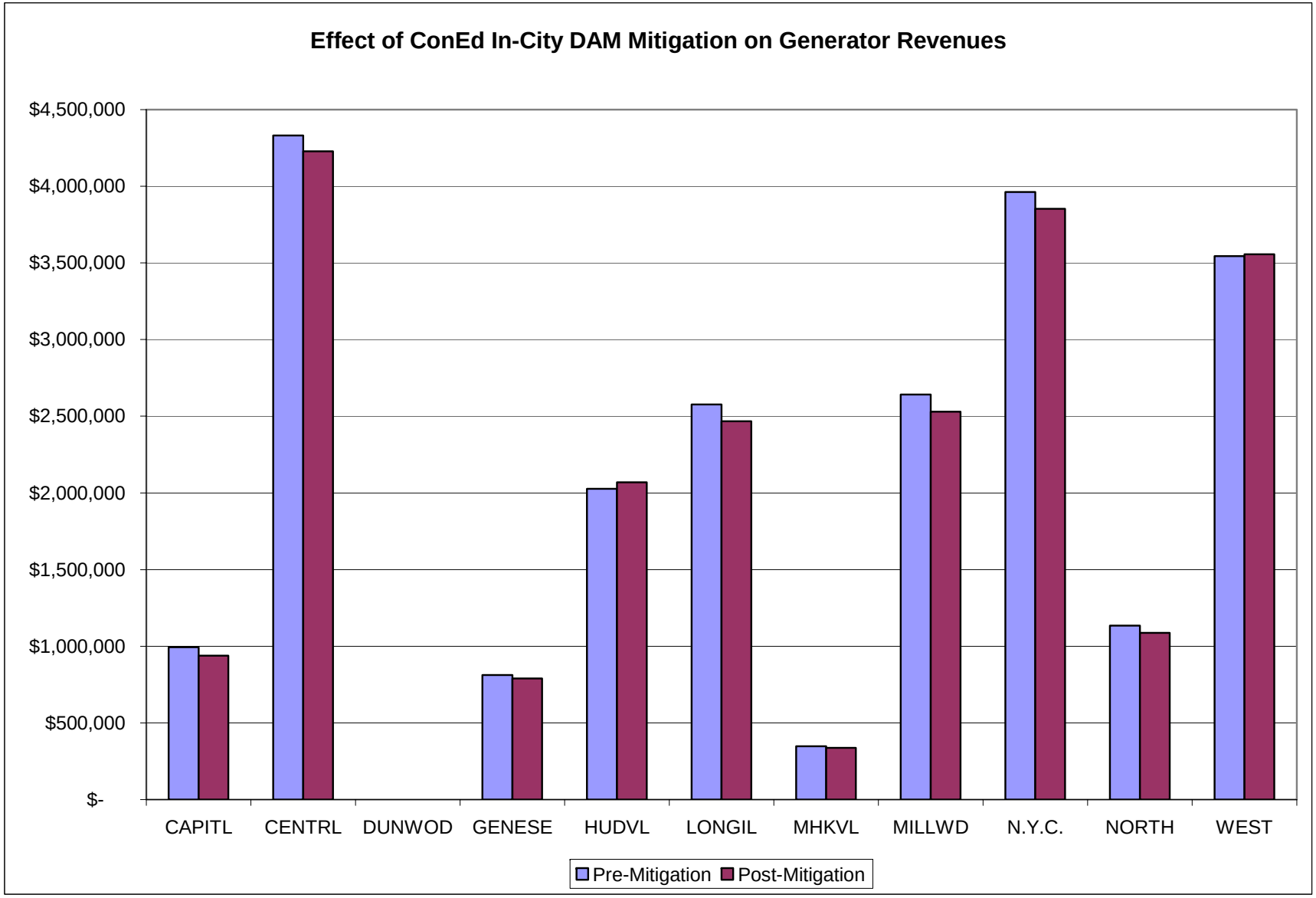

Effect of ConEd In-City DAM Mitigation on Generator Revenues
$4,500,000
$4,000,000
$3,500,000
$3,000,000
$2,500,000
$2,000,000
$1,500,000
$1,000,000
$500,000
$-
CAPITL
CENTRL
DUNWOD
GENESE
HUDVL
LONGIL
MHKVL
MILLWD
N.Y.C.
NORTH
WEST
Pre-Mitigation
Post-Mitigation

Figure 6

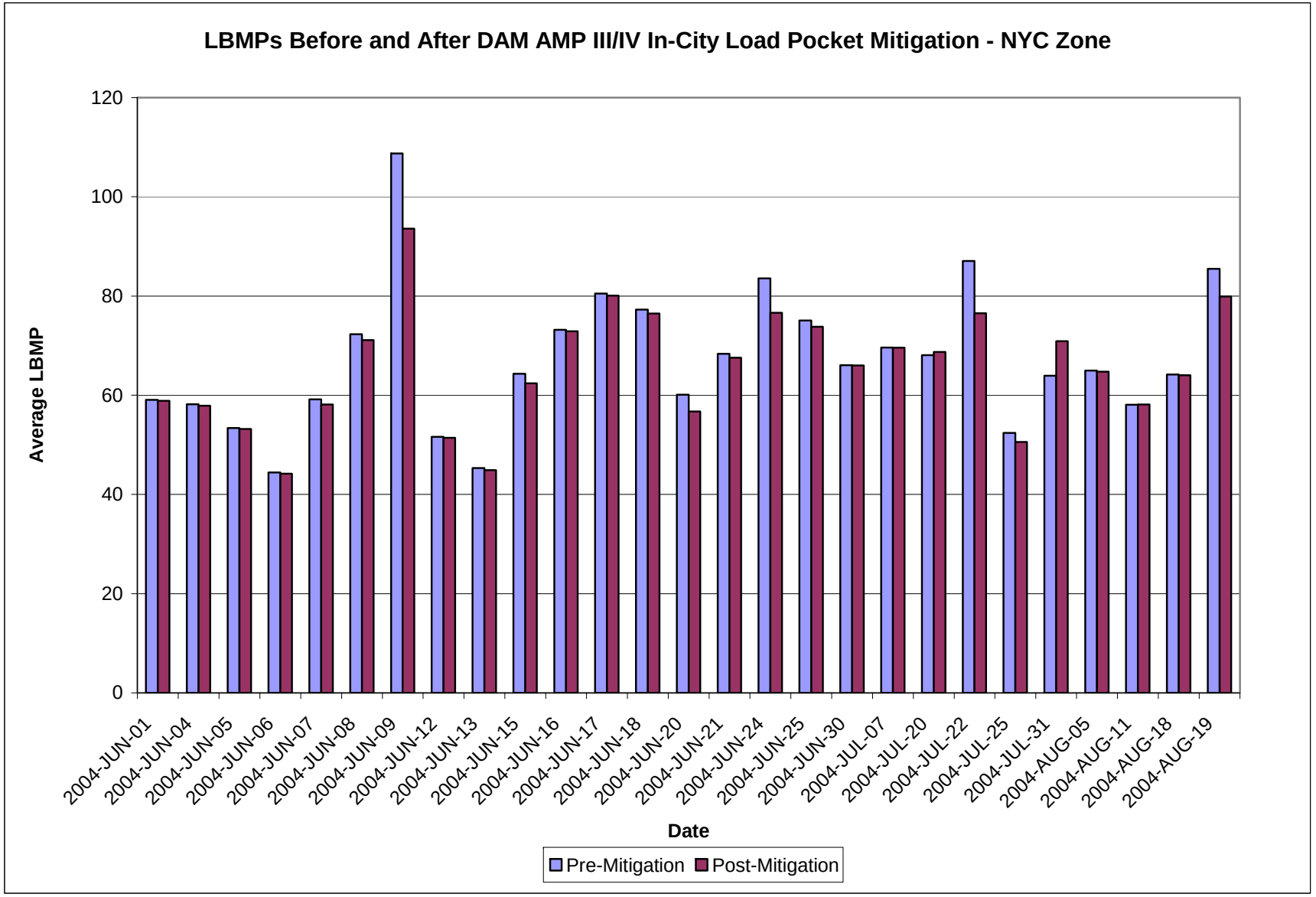
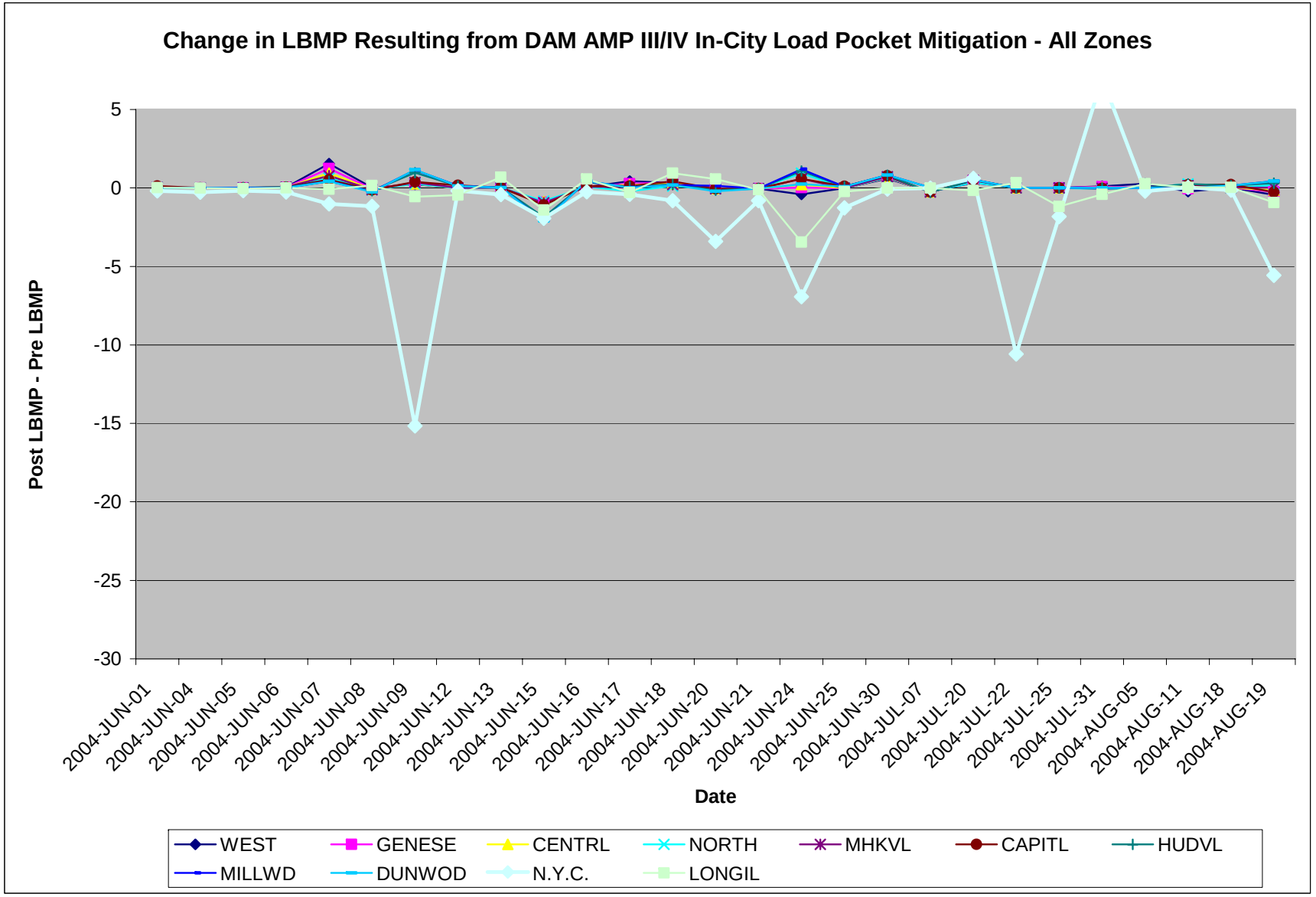

LBMPs Before and After DAM AMP III/IV In-City Load Pocket Mitigation - NYC Zone
Average LBMP
120
100
80
60
40
20
0
2004-JUN-01
2004-JUN-04
2004-JUN-05
2004-JUN-06
2004-JUN-07
2004-JUN-08
2004-JUN-09
2004-JUN-12
2004-JUN-13
2004-JUN-15
2004-JUN-16
2004-JUN-17
2004-JUN-18
2004-JUN-20
2004-JUN-21
2004-JUN-24
2004-JUN-25
2004-JUN-30
2004-JUL-07
2004-JUL-20
2004-JUL-22
2004-JUL-25
2004-JUL-31
2004-AUG-05
2004-AUG-11
2004-AUG-18
2004-AUG-19
Date
Pre-Mitigation
Post-Mitigation

Figure 7


Change in LBMP Resulting from DAM AMP III/IV In-City Load Pocket Mitigation - All Zones
Post LBMP - Pre LBMP
5
0
-5
-10
-15
-20
-25
-30
2004-JUN-01
2004-JUN-04
2004-JUN-05
2004-JUN-06
2004-JUN-07
2004-JUN-08
2004-JUN-09
2004-JUN-12
2004-JUN-13
2004-JUN-15
2004-JUN-16
2004-JUN-17
2004-JUN-18
2004-JUN-20
2004-JUN-21
2004-JUN-24
2004-JUN-25
2004-JUN-30
2004-JUL-07
2004-JUL-20
2004-JUL-22
2004-JUL-25
2004-JUL-31
2004-AUG-05
2004-AUG-11
2004-AUG-18
2004-AUG-19
Date
WEST
GENESE
CENTRL
NORTH
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CAPITL
HUDVL
MILLWD
DUNWOD
N.Y.C.
LONGIL

Figure 8

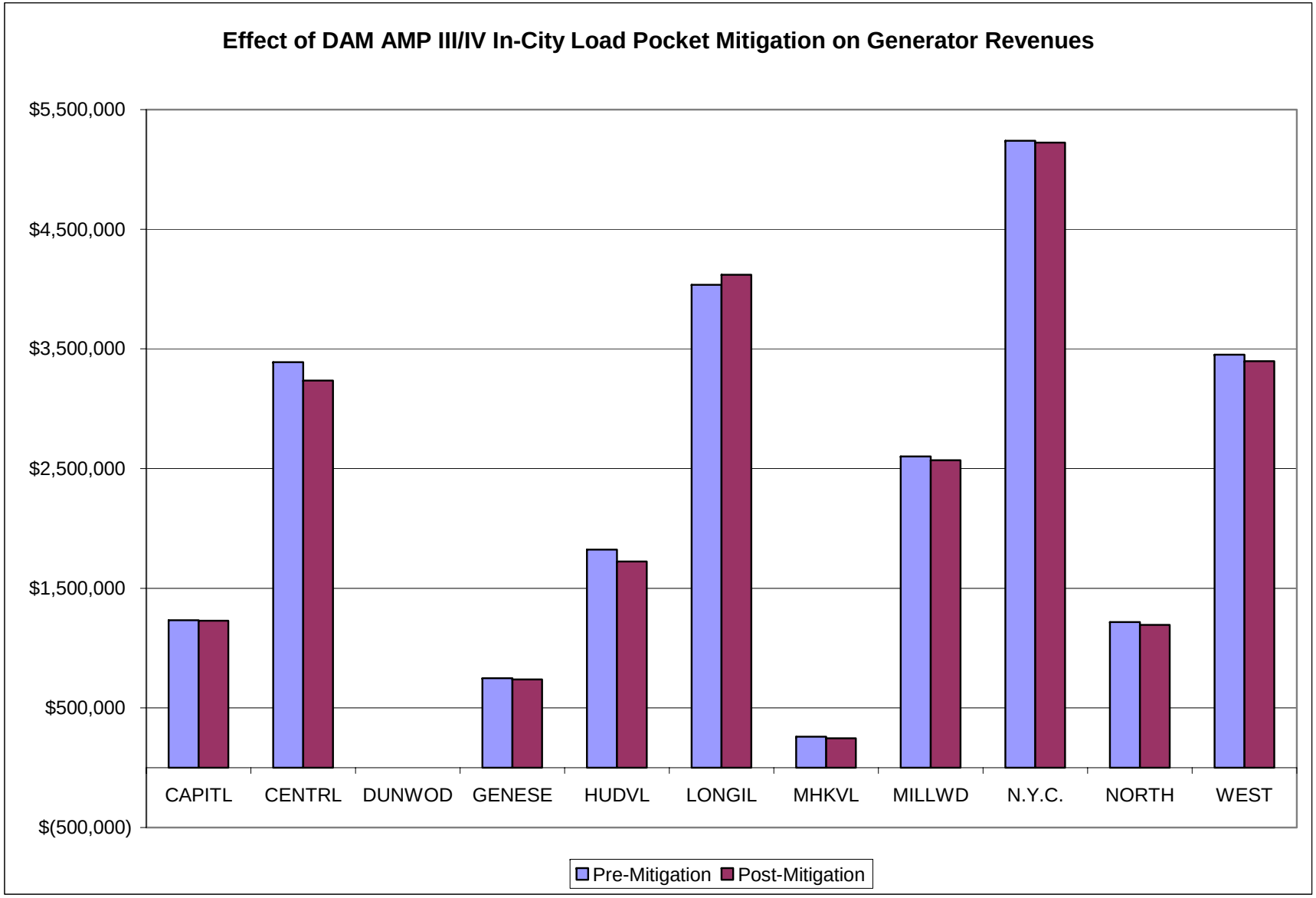

Effect of DAM AMP III/IV In-City Load Pocket Mitigation on Generator Revenues
$5,500,000
$4,500,000
$3,500,000
$2,500,000
$1,500,000
$500,000
$(500,000)
CAPITL
CENTRL
DUNWOD
GENESE
HUDVL
LONGIL
MHKVL
MILLWD
N.Y.C.
NORTH
WEST
Pre-Mitigation
Post-Mitigation

Figure 9

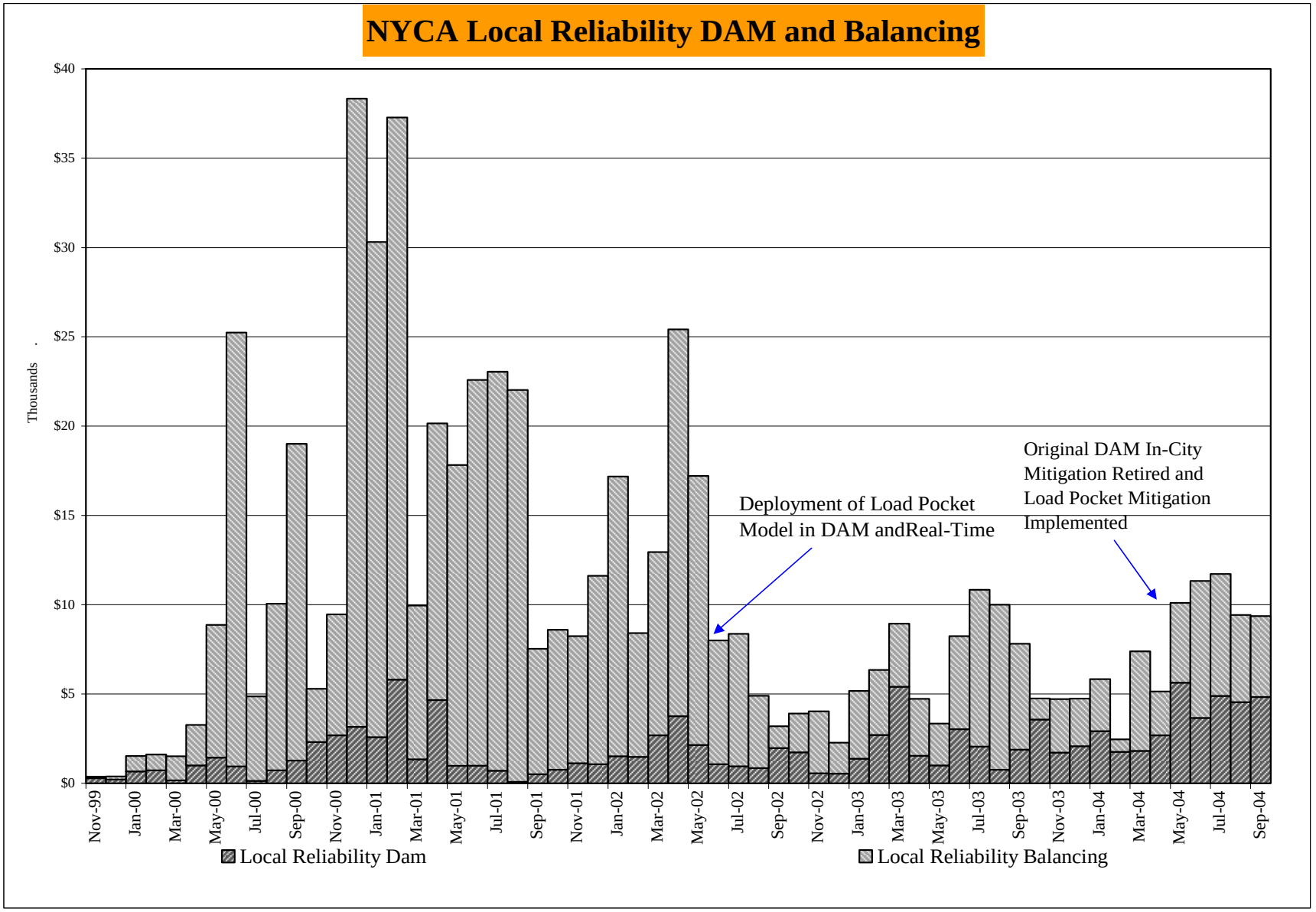

NYCA Local Reliability DAM and Balancing
Thousands
$40
$35
$30
$25
$20
$15
$10
$5
$0
Nov-99
Jan-00
Mar-00
May-00
Jul-00
Sep-00
Nov-00
Jan-01
Mar-01
May-01
Jul-01
Sep-01
Nov-01
Jan-02
Mar-02
May-02
Jul-02
Sep-02
Nov-02
Jan-03
Mar-03
May-03
Jul-03
Sep-03
Nov-03
Jan-04
Mar-04
May-04
Jul-04
Sep-04
Deployment of Load Pocket Model in DAM andReal-Time
Original DAM In-City Mitigation Retired and Load Pocket Mitigation Implemented
Local Reliability Dam
Local Reliability Balancing

Figure 10

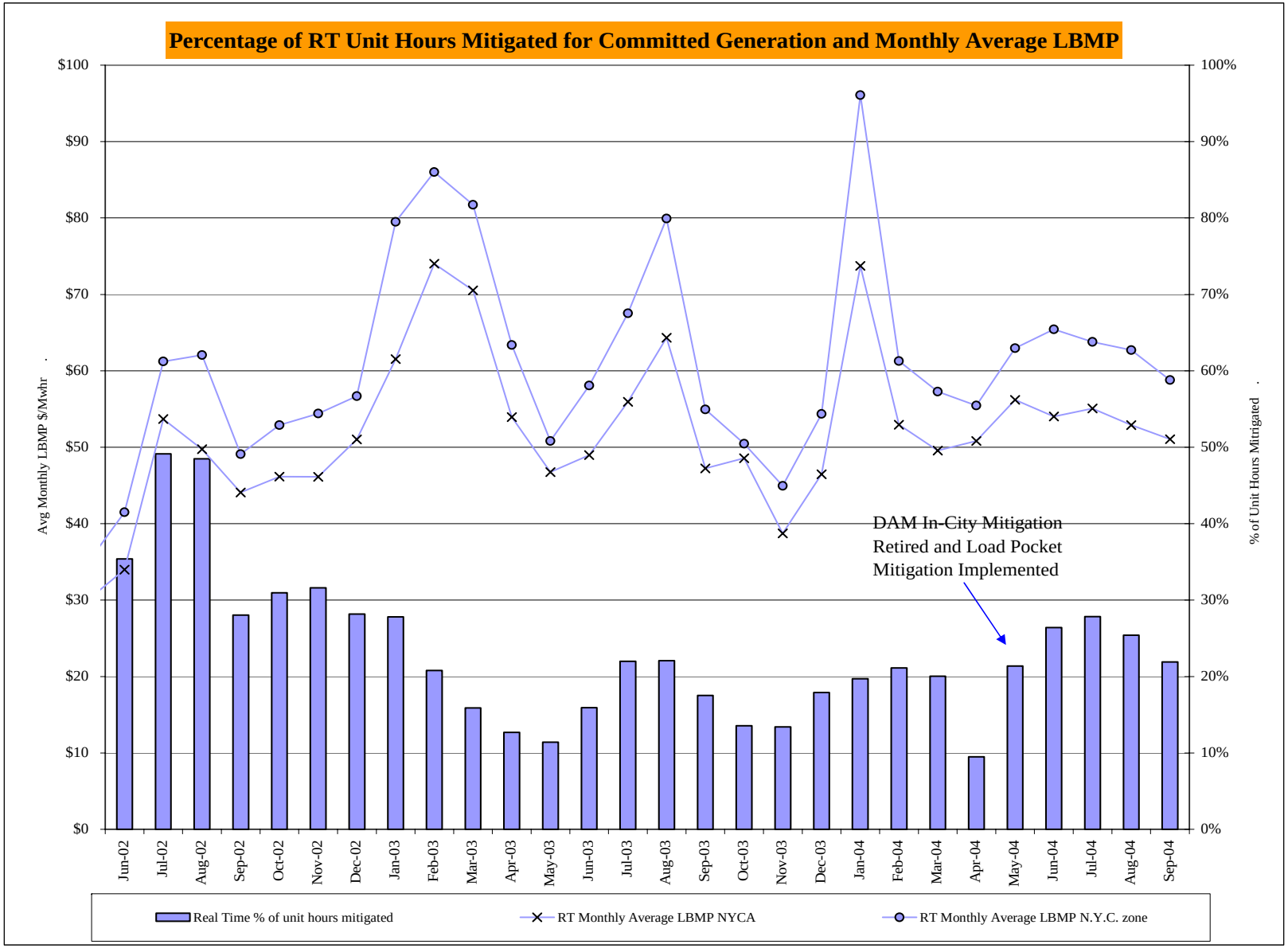
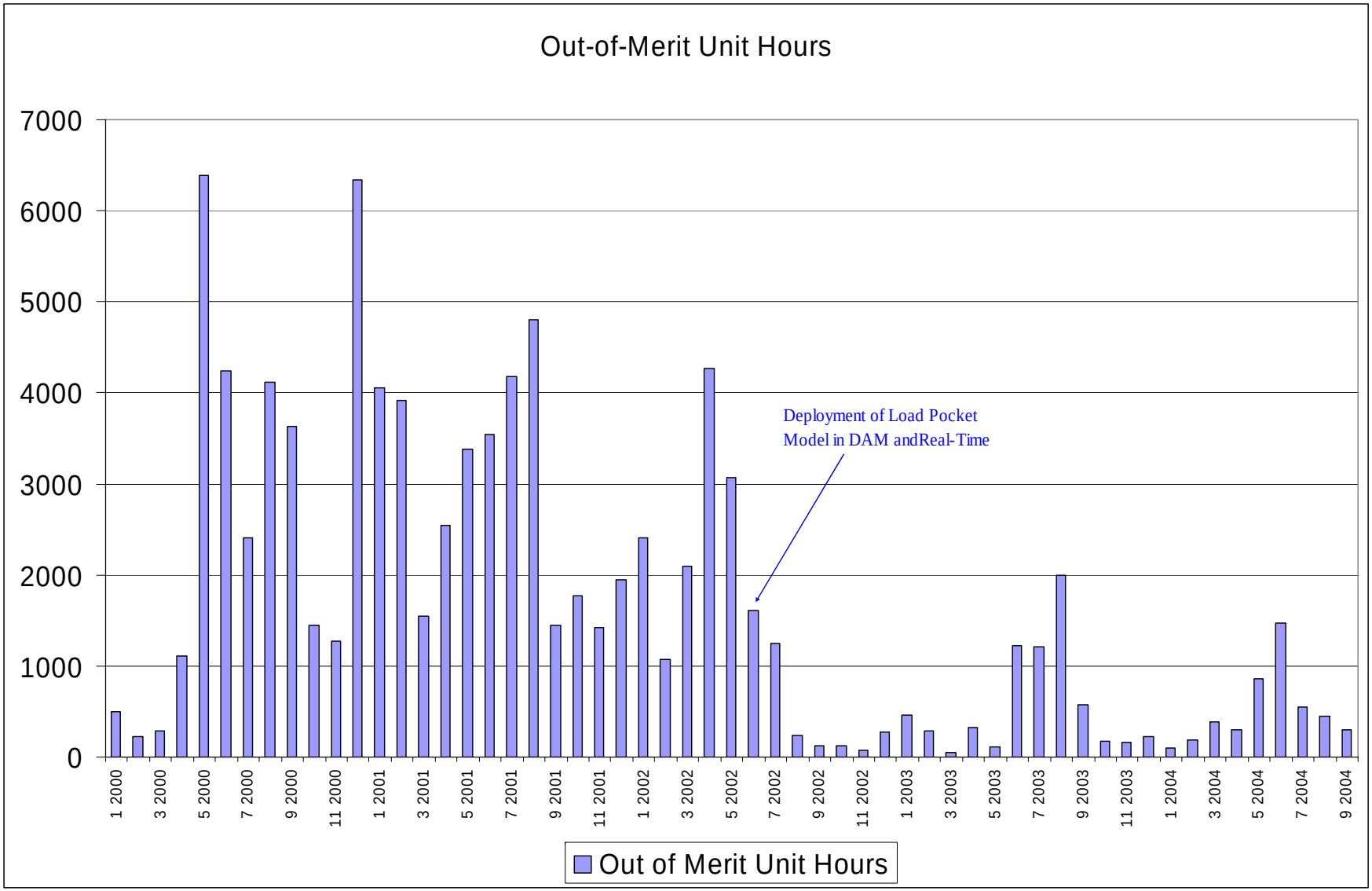

Percentage of RT Unit Hours Mitigated for Committed Generation and Monthly Average LBMP
Avg Monthly LBMP $/Mwhr
% of Unit Hours Mitigated
$100
$90
$80
$70
$60
$50
$40
$30
$20
$10
$0
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
DAM In-City Mitigation Retired and Load Pocket Mitigation Implemented
Jun-02
Jul-02
Aug-02
Sep-02
Oct-02
Nov-02
Dec-02
Jan-03
Feb-03
Mar-03
Apr-03
May-03
Jun-03
Jul-03
Aug-03
Sep-03
Oct-03
Nov-03
Dec-03
Jan-04
Feb-04
Mar-04
Apr-04
May-04
Jun-04
Jul-04
Aug-04
Sep-04
Real Time % of unit hours mitigated
RT Monthly Average LBMP NYCA
RT Monthly Average LBMP N.Y.C. zone

Figure 11


Out-of-Merit Unit Hours
7000
6000
5000
4000
3000
2000
1000
0
Deployment of Load Pocket
Model in DAM andReal-Time
1 2000
3 2000
5 2000
7 2000
9 2000
11 2000
1 2001
3 2001
5 2001
7 2001
9 2001
11 2001
1 2002
3 2002
5 2002
7 2002
9 2002
11 2002
1 2003
3 2003
5 2003
7 2003
9 2003
11 2003
1 2004
3 2004
5 2004
7 2004
9 2004
Out of Merit Unit Hours