The attached spreadsheet provides hourly detail of the calculations used to support the following four statements in David Patton's affidavit:

> #1: In Paragraph 8: "…The use of incorrect inputs led SCUC to estimate modeled flows that were an average of 680 MW lower than the actual flows over the Central-East interface."

> #2: In Paragraph 14: "…In the DAM simulations, an additional 150 MW was committed in the Capital zone and an additional 190 MW was committed in other portions of eastern New York. This is based on the hours from 6 am to 10 pm."

> #3: In Paragraph 18: "….I estimate that the excess congestion rents due to the over-scheduling equaled $3.5 million during the Waiver Period."

> #4: In Paragraph 19: "…I estimate that this led to $10.9 million in negative balancing market residuals."

#1: 680 MW Error in DAM Modeled Interface Flows Across Central-East Interface

The Waldwick-Ramapo PARs have a substantial direct effect on power flows across the Central-East Interface and the West-Central Interface. Hence, the use of erroneous inputs in SCUC related to the Waldwick-Ramapo PAR flows affected the amount of flows modeled in SCUC across the Central-East Interface and the West-Central Interface. For the Central-East Interface, the average error in modeled flows was 680 MW during the Waiver Period.

The sheet titled "Modeled Flow Differences" provides hourly detail on the underlying calculation for each interface. The flows across the Waldwick-Ramapo PARs affect flows across the Central-East interface and the West-Central interface according to the following formula:

> Column J = (Column G – Column F) * Column I

Where:

> Column J = Error in DAM Modeled Interface Flows

> Column G = Correct DAM PAR Flows

> Column F = Erroneous DAM PAR Flows

> Column I = Shift Factor of PARs to the Interface

#2: In the Simulations an Additional 150 MW Committed in Capital Zone and 190 MW in Other Eastern Zones

The erroneous inputs related to the Waldwick-Ramapo PAR flows reduced the power flows modeled by SCUC from western New York to eastern New York. This allowed SCUC to serve more load in the east with generation in the west than was physically

feasible during the Waiver Period. When simulations were run using the corrected inputs related to the Waldwick-Ramapo PARs, less generation was scheduled in the west and more generation was scheduled in the east. As a result, substantially more capacity was committed in eastern New York in the simulations.

The sheet titled "Commitment Differences" provides detail on the underlying calculation. For each hour between 6 am and 10 pm, the sheet reports the difference in the megawatts of capacity committed in the Capital zone (Zone F) and the portions of eastern New York (Zones G-K) between the actual SCUC runs and the simulated SCUC runs. The differences for Zone F are shown in Column C, and the differences for Zones G-K are shown in Column D. A positive number indicates a net increase in committed capacity, while a negative number indicates a net reduction in committed capacity. Gas turbines and other offline reserve providers are excluded from the calculation.[1]

#3: The Excess Congestion Rents Collected in the DAM Equaled $3.5 Million

The erroneous inputs related to the Waldwick-Ramapo PARs allowed SCUC to schedule more flows across the Central-East Interface and the West-Central Interface than was physically feasible. Since the amount of congestion rents collected in the DAM is related to the amount of flows scheduled across constrained interfaces, the excess congestion rents are equal to the shadow price of the interface multiplied by the error in the interface flows modeled by SCUC that resulted from the erroneous inputs related to the Waldwick-Ramapo PARs.

The sheet titled "Modeled Flow Differences" provides hourly detail on the underlying calculation for each interface. The flows across the Waldwick-Ramapo PARs affect the amount of DAM Congestion Rents collected by the ISO according to the following formula:

Column L = Column D * Column J

Where:

Column L = Additional DAM Congestion Rents Collected

Column D = DAM Interface Shadow Price

Column J = Error in DAM Modeled Interface Flows (defined under #1)

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[1]   In the spreadsheet, the average difference for Zone F is 138 MW, and the average difference for Zones G-K is 191 MW. The average for Zone F is smaller than the 150 MW reported in the affidavit, because the spreadsheet excludes changes in commitment of units that are usually capable of providing offline reserves.

#4: The Balancing Market Residual Shortfall is $10.5 Million[2]

Just as congestion rents are collected in the DAM when power is scheduled to flow across constrained interfaces, congestion rents may be collected in the RTM when additional power is scheduled to flow (in excess of the DAM scheduled amount) across constrained interfaces. When the interface is constrained in the RTM despite less power being scheduled to flow in the RTM than in the DAM, congestion revenue shortfalls (as opposed to rents) accrue. The amount of the balancing congestion revenue shortfall in the RTM is equal to the amount by which the interface was over-scheduled in the DAM multiplied by the shadow price of the interface in the RTM. The amount of over-scheduling in the DAM attributable to the erroneous PAR flows is equal to error in DAM modeled interface flows associated with the erroneous PAR settings minus the interface capability unutilized in the DAM.[3]

The sheet titled "Modeled Flow Differences" provides hourly detail on the underlying calculation for each interface. The error in DAM modeled interface flows affects the amount of balancing congestion residual shortfalls that are accrued by the ISO according to the following formula:

Column K = Column E * Column J – Column C

Where:

Column K = Balancing Congestion Residual Shortfalls

Column E = RTM Interface Shadow Price

Column J = Error in DAM Modeled Interface Flows (defined under #1)

Column C = Unused DAM Interface Capability

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[2] In the spreadsheet, the total of the balancing congestion residual shortfalls is $10.5 million. This differs from the $10.9 million reported in the affidavit, because it reflects the use of more accurate data that was previously unavailable. Specifically, the unused DAM interface capability for the Central-East Interface was not available in the SCUC outputs for Janauary 11 and January 15, because the constraint was not active in the DAM on those days. Since the values in the spreadsheet were estimated by the NYISO after the affidavit was filed, the affidavit assumed the unused DAM interface capability was 0 MW for the Central-East Interface on those days, providing an upper limit for the actual balancing congestion residual shortfalls attributable to the erroneous PAR flows.

[3] If the unused interface capability in the DAM exceeds the error in DAM modeled interface flows associated with the erroneous PAR flows, the balancing congestion revenue shortfalls attributable to the erroneous PAR flows is $0.