Schedule 54 – FOA Event Settlement Adjustments

A. FOA Event's Undue Financial Impacts

A declared FOA Event's large real-time financial impacts are undue to the extent that they arise from real-time conditions extremely different from those modeled in the Day-Ahead Energy and Operating Reserve Market, which presupposes that transmission facilities shall remain largely intact during the ensuing Real-Time Energy and Operating Reserve Market.

B. FOA Event Settlement Inputs

When rendered unavailable by forced transmission outages during an FOA Event, Resources unable to produce Energy at the level required by their Day-Ahead Schedules can be forced to buy back such Energy at extremely high real-time prices. Conversely, Loads also rendered unavailable by forced transmission outages during an FOA Event can receive a windfall by selling back at extremely high prices in the Real-Time Energy and Operating Reserve Market, the Energy they bought at much lower prices in the Day-Ahead Energy and Operating Reserve Market. Likewise, Virtual Transactions associated with Commercial Pricing Nodes in the FOA Event area will be forced to buy out of their day-ahead positions at extremely high real-time prices resulting in undue financial impacts. These circumstances can result in extremely large market revenue shortfalls, and correspondingly, extremely large market-wide uplift charges. Such incongruous and anomalous financial results shall be remediated as provided herein.

1. Applicable Settlement Data

For each Commercial Pricing Node and Hour covered by an FOA Event declaration, the Transmission Provider shall use the following hourly and five-minute settlement data:

(a) MW amount cleared in the Day-Ahead Energy and Operating Reserve Market

(b) Day-Ahead Ex Post Locational Marginal Price

(c) MW amount of metered injection/withdrawal in the Real-Time Energy and Operating Reserve Market

(d) Real-Time Ex Post Locational Marginal Price

(e) MW amount of Load shed volume as provided by the Local Balancing Authority

(f) Deployed MW volume of Load Modifying Resources

(g) Deployed MW volume of Emergency Demand Response Resources

FOA Event settlement adjustments shall be made for each applicable charge type identified in Section C. A Load Zone with fully or partially forced off Loads as a result of an FOA Event will be eligible for a settlement adjustment. A Resource located in the FOA Event area that has at least six (6) Dispatch Intervals with no Actual Energy Injection will be eligible for a settlement adjustment. All Virtual Transactions associated with Commercial Pricing Nodes in the FOA Event area will be eligible for a settlement adjustment.

2. Exclusion of Directed Shedding of Loads, Deployed Load Modifying Resources and Emergency Demand Response Resources

The FOA Event settlement adjustment shall not include:

(a) Load shed in response to the Transmission Provider's Load Shedding directives. The impacted Local Balancing Authority/ies shall provide an hourly MW breakdown of such Load Shedding by Load Zone Commercial Pricing Node, within thirty (30) Calendar Days after the declaration of an FOA Event.

(b) Load volumes associated with deployed Load Modifying Resources and Emergency Demand Response Resources that responded to Transmission Provider instructions. The Market Participant shall submit meter data to the Transmission Provider in accordance with provisions of the Tariff. The Transmission Provider shall perform Measurement and Verification of the submitted meter data to determine the load reduction volumes.

C. Charge Types Covered by FOA Event Settlement

FOA Event settlement adjustments shall apply to the following real-time charge types:

- Real-Time Asset Energy Amount
- Non-Excessive Energy Amount
- Real-Time Virtual Energy Amount

1. Real-Time Asset Energy Amount charge type (RT_ASSET_EN)

The Real-Time Asset Energy Amount charge type is the net energy costs (or credit) for an Asset Owner from its Load assets and transactions at those assets. The settlement adjustment for a Load Zone that includes a Forced-Off Asset, has a Day-Ahead Schedule for Energy, and has Actual Energy Withdrawal, net of

Real-Time Financial Schedules, below the Day-Ahead Schedule, shall be calculated in two steps. The first step will calculate the FOA Load Volume, which is the real-time deviation volume attributed to the FOA Event. The second step will calculate the dollar amount of the FOA Load Adjustment for the deviation volume. The FOA Load Adjustment amount will be added to the hourly Real-Time Asset Energy Amount charge type for the Load Zone.

(1) Step One: Calculate FOA Load Volume

Real-time asset energy volume, as defined in the Market Settlements Business Practices Manual (BPM-005), represents the Load Zone's real-time deviation volume from the Day-Ahead Schedule.

If the real-time asset energy volume is less than zero (0), indicating the Load Zone is selling back MWs in real-time, then the FOA Load Volume shall be calculated as the minimum of (a) the sum of (1) real-time asset energy volume (2) Load shed volume (3) deployed Load Modifying Resources volume and (4) deployed Emergency Demand Response Resources volume or (b) zero (0). If the real-time asset energy volume is greater than or equal to zero (0), then the FOA Load Volume is zero (0).

IF RT_ASSET_VOL < 0 THEN

FOA_LOAD_VOL = MIN (RT_ASSET_VOL + FOA_LOAD_SHED + LMR_VOL + EDR_VOL), 0)

ELSE

FOA_LOAD_VOL = 0

Where:

RT_ASSET_VOL = Hourly net real-time energy volume as defined in BPM-005.

FOA_LOAD_VOL = Hourly reduction volume attributed to the FOA Event.

FOA_LOAD_SHED = Hourly Load shed volume directed by the Transmission Provider.

LMR_VOL = Hourly Load reduction volume by Load Modifying Resources.

EDR_VOL = Hourly Load reduction volume by Emergency Demand Response Resources.

(2) Step Two: Calculate FOA Load Adjustment

The FOA Load Adjustment amount is equal to the product of (1) the FOA Load Volume (2) the difference between (a) the applicable Real-Time Ex-Post LMP and (b) the applicable Day-Ahead Ex-Post LMP and (3) negative one (-1).

FOA_LOAD_ADJ = FOA_LOAD_VOL * (RT_LMP – DA_LMP) * -1

Where:

FOA_LOAD_ADJ = Hourly Asset Adjustment amount attributed to the FOA Event.

FOA_LOAD_VOL = Hourly reduction volume attributed to the FOA Event.

RT_LMP = Hourly Real-Time Ex-Post LMP for the Load Zone.

DA_LMP = Hourly Day-Ahead Ex-Post LMP for the Load Zone.

2. Non-Excessive Energy Amount charge type (RT_ASM_NXE)

The Real-Time Non-Excessive Energy Amount represents an Asset Owner's credit or charge for net energy injections at Resources owned by the Asset Owner.

a. The settlement adjustment for a Resource (excluding Electric Storage Resources with a Day-Ahead Schedule to withdraw Energy) that is a Forced-Off Asset, has a Day-Ahead Schedule for Energy, and has no Actual Energy Injection, shall be calculated in two steps. The first step will calculate the FOA NXE Volume, which is the real-time deviation volume attributed to the FOA Event, for each Dispatch Interval in the Hour. The second step will calculate the hourly dollar amount of the FOA NXE Adjustment by summing the financial impact of the deviation volume for each Dispatch Interval in the Hour. The FOA NXE Adjustment amount will be added to the hourly Real-Time Non-Excessive Energy Amount charge type for the Resource.

(1) Step One: Calculate FOA NXE Volume

Non-Excessive Energy volume, as defined in the Market Settlements Business Practice Manual (BPM-005), represents the Resource's energy output circumscribed to its Excessive Energy Threshold. Hourly Schedule Offset, as defined in the Market Settlements Business Practice Manual (BPM-005), represents the Resource's Day-Ahead Schedule net of Real-Time Financial Schedules and Real-Time Grandfathered Carve Out Schedules.

The FOA NXE Volume for a given Dispatch Interval ("i") is calculated as the maximum of (a) the product of (1) the sum of the Dispatch Interval ("i") Non-Excessive Energy volume and the hourly schedule offset volume and (2) negative one (-1) or (b) zero (0).

IF NXE_i <> 0 THEN

$FOA\_NXE\_VOL_i = 0$

ELSE

FOA_NXE_VOLi = MAX ((NXEi + SCHD OFFSET VOL) * -1,0)

Where:

FOA_NXE_VOLi = Reduction volume for Dispatch Interval i attributed to the FOA Event.

NXEi = Non-Excessive Energy volume as defined in BPM-005 for Dispatch Interval i.

SCHD_OFFSET = Hourly Schedule offset as defined in defined in BPM-005

(2) Step Two: Calculate FOA NXE Adjustment

The hourly FOA NXE Adjustment amount is equal to the sum for each Dispatch Interval ("i") in the Hour, the product of (1) the FOA NXE Volume (2) the difference between the applicable Real-Time Ex-Post

LMP and the applicable Day-Ahead Ex-Post LMP (3) the duration of the Dispatch Interval expressed in Hours and (4) negative one (-1).

FOA_ NXE_ADJ = ∑Interval ((FOA_NXE_VOLi * (RT LMP INTi – DA LMP)) /12) * -1

Where:

FOA_NXE_ADJ = Hourly NXE Adjustment amount attributed to the FOA Event.

$FOA\_NXE\_VOL_i$ = Reduction volume for Dispatch Interval i attributed to the FOA Event.

$RT\_LMP\_INT_i$ = Real-Time Ex-Post LMP for Dispatch Interval i for the Resource.

DA_LMP = Hourly Day-Ahead Ex-Post LMP for the Resource.

b. The settlement adjustment for an Electric Storage Resource that is a Forced-Off Asset, has a Day-Ahead Schedule to withdraw Energy, and has no Actual Energy Injection, shall be calculated in two steps. The first step will calculate the FOA NXE Volume, which is the real-time deviation volume attributed to the FOA Event, for each Dispatch Interval in the Hour. The second step will calculate the hourly dollar amount of the FOA NXE Adjustment by summing the financial impact of the deviation volume for each Dispatch Interval in the Hour. The FOA NXE

Adjustment amount will be added to the hourly Real-Time Non-Excessive Energy Amount charge type for the Resource.

(1) Step One: Calculate FOA NXE Volume

Non-Excessive Energy volume, as defined in the Market Settlements Business Practice Manual (BPM-005), represents the Resource's energy output circumscribed to its Excessive Energy Threshold. Hourly Schedule Offset, as defined in the Market Settlements Business Practice Manual (BPM-005), represents the Resource's Day-Ahead Schedule net of Real-Time Financial Schedules and Real-Time Grandfathered Carve Out Schedules.

If the Electric Storage Resource pays retail rates for charging energy, the FOA NXE Volume will be set to zero (0). The Electric Storage Resource will be fully rebated any charges or credits for real-time Load deviations under the current settlement provisions implemented in compliance with FERC Order No. 841.

The FOA NXE Volume for a given Dispatch Interval ("i") is calculated as the minimum of (a) the product of (1) the sum of the Dispatch Interval Non-Excessive Energy volume and the hourly schedule offset volume (2) negative one (-1) or (b) zero (0).

IF ESR RETAIL_FL = 'Y' THEN

FOA_NXE_VOLi = 0

ELSE

IF NXE_i <> 0 THEN

$FOA\_NXE\_VOL_i = 0$

ELSE

$FOA\_NXE\_VOL_i = MIN ((NXE_i + SCHD\ OFFSET\ VOL) * -1,0)$

Where:

ESR_RETAIL_FL =Flag indicating the ESR is paying retail rates for charging energy

FOA_NXE_VOLi = Reduction volume for Dispatch Interval i attributed to the FOA Event.

NXEi = Non-Excessive Energy volume as defined in BPM-005 for Dispatch Interval i.

SCHD_OFFSET = Hourly Schedule offset as defined in defined in BPM-005

(2) Step Two: Calculate FOA NXE Adjustment

The hourly FOA NXE Adjustment amount is equal to the sum of all Dispatch Intervals (“i”) in the Hour, the product of (1) the FOA NXE Volume (2) the difference between the applicable Real-Time Ex-Post LMP and the applicable Day-Ahead Ex-Post LMP (3) the duration of the Dispatch Interval expressed in Hours and (4) negative one (-1).

FOA_ NXE_ADJ = ∑Interval ((FOA_NXE_VOLi * (RT LMP INTi – DA LMP)) /12) * -1

Where:

FOA_NXE_ADJ = Hourly NXE Adjustment amount attributed to the FOA Event.

$FOA\_NXE\_VOL_i$ = Reduction volume for Dispatch Interval i attributed to the FOA Event.

$RT\_LMP\_INT_i$ = Real-Time Ex-Post LMP for Dispatch Interval i for the Resource.

DA_LMP = Hourly Day-Ahead Ex-Post LMP for the Resource.

3. Real-Time Virtual Energy Amount charge type (RT_VIRT_EN)

The Real-Time Virtual Energy Amount represents an Asset Owner's total real-time net cost (or credit) associated with the Asset Owner's Day-Ahead net virtual schedules being backed out, or unwound, in the Real-Time Energy and Operating Reserve Market.

The settlement adjustment for a Virtual Transaction on a Commercial Pricing Node in the FOA Event area shall be calculated as the product of (1) the FOA Virtual Volume and (2) the difference between the applicable Real-Time Ex-Post LMP and the applicable Day-Ahead Ex-Post LMP. The FOA Virtual Adjustment

amount will be added to the hourly Real-Time Virtual Energy Amount charge type for the Virtual Transaction.

FOA_VIRT_VOL = DA_VSCHD

FOA_VIRT_ADJ = FOA_VIRT_VOL * (RT_LMP – DA_LMP)

Where:

FOA_VIRT_VOL = Hourly Virtual Transaction volume attributed to the FOA Event.

DA_VSCHD = Cleared Day-Ahead Virtual Schedule volume for the Hour.

FOA_VIRT_ADJ = Hourly Virtual Adjustment amount attributed to the FOA Event.

RT_LMP = Hourly Real-Time Ex-Post LMP at the Commercial Pricing Node of the Virtual Transaction.

DA_LMP = Hourly Day-Ahead Ex-Post LMP at the Commercial Pricing Node of the Virtual Transaction.