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| NPRR Number | [985](http://www.ercot.com/mktrules/issues/NPRR985) | NPRR Title | Modify Forward Adjustment Factors to Include Pricing for the Current Operating Day |
| Date Posted | November 22, 2019 |
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| Requested Resolution  | Normal |
| Nodal Protocol Sections Requiring Revision  | 16.11.4.3.3, Forward Adjustment Factors |
| Related Documents Requiring Revision/Related Revision Requests | None |
| Revision Description | This Nodal Protocol Revision Request (NPRR) modifies the time period used to compute the forward adjustment factor components of the Total Potential Exposure (TPE) calculation to clarify that the three forward weeks commence on the applicable Operating Day, rather than following the Operating Day. |
| Reason for Revision |  Addresses current operational issues. Meets Strategic goals (tied to the [ERCOT Strategic Plan](http://www.ercot.com/content/wcm/lists/144926/ERCOT_Strategic_Plan_2019-2023.pdf) or directed by the ERCOT Board). Market efficiencies or enhancements Administrative Regulatory requirements Other: (explain)*(please select all that apply)* |
| Business Case | Currently an externally-sourced vendor’s forward prices for the three weeks following the current Operating Day are used to compute forward adjustment factors. However, forward prices are available for the current Operating Day. By beginning the three-week period on the Operating Day, rather than after it, ERCOT will incorporate the most recent available forward market pricing data in the credit calculation, thereby reflecting updated market price expectations and improving the accuracy of the calculation.  |

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| Market Segment | Not applicable |

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| Proposed Protocol Language Revision |

***16.11.4.3.3 Forward Adjustment Factors***

(1) Forward adjustment factors are used to adjust TPEA based on electricity futures prices.

(a) Futures Weekly Average Price (FWAP):

 FWAP *w* = (1/*nfwh*) \* $\sum\_{fwh=1}^{nfwh}$$\sum\_{fwh=1}^{nfwh} [FHP\_{fwh, rhub}]$

(b) Projected Real-Time Forward Average Price (PRFAP):

 PRFAP = $\sum\_{w=1}^{3} [RWF\_{w}\* FWAP\_{w}]$

(c) Projected Day-Ahead Forward Average Price (PDFAP):

PDFAP = $\sum\_{w=1}^{3} [DWF\_{w}\* FWAP\_{w}]$

(d) Historic Real-Time Settled Average Price (HRSAP):

 HRSAP = (1/*nhrh*) \* $\sum\_{hrh=1}^{nhrh}\sum\_{i=1}^{4} [RTSPP\_{hrh, i, rhub}]/4$

(e) Historic Day-Ahead Settled Average Price (HDSAP):

 HDSAP = (1/*nhdh*) \* $\sum\_{hdh=1}^{nhdh} [DASPP\_{hdh, rhub}]$

(f) Real-Time Forward Adjustment Factor (RFAF):

 RFAF = PRFAP/HRSAP

(g) Day-Ahead Forward Adjustment Factor (DFAF):

 DFAF = PDFAP/HDSAP

The above variables are defined as follows:

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| --- | --- | --- |
| **Variable** | **Unit** | **Description** |
| PRFAP | $/MWh | *Projected Real-Time Forward Average Price*⎯The average RTM price per MWh projected forward based on futures market prices. |
| PDFAP | $/MWh | *Projected Day-Ahead Forward Average Price*⎯The average DAM price per MWh projected forward based on futures market prices. |
| *w* | None | One of the three consecutive forward weeks beginning with the current Operating Day. |
| *RWFw* | None | *Real-Time Weight Factor for forward week w* such that $\sum\_{w=1}^{3}RWF\_{w}=1$$\sum\_{w=1}^{3}w=1$ |
| *DWFw* | None | *Day-Ahead Weight Factor for forward week w* such that $\sum\_{w=1}^{3}DWF\_{w}=1$ |
| *fwh* | None | *Forward Week Hour*⎯An Operating Hour from a forward week *w*. |
| *nfwh* | None | *Number of Forward Week Hours*⎯Total number of hours in a forward week. |
| *rhub* | None | *Reference Hub*⎯The electrical Hub used as a reference for futures mark-to-market prices. |
| FWAP*w* | $/MWh | *Futures Weekly Average Price for week w*⎯The average futures price for the hours of the forward week *w*. |
| FHP*fwh, rhub* | $/MWh | *Futures Hourly Price of the Reference Hub rhub for Forward Week Hour fwh*⎯The most recent mark-to-market price available for an electricity futures product that is applicable to the forward week hour *fwh* for the reference Hub *rhub*.ERCOT will disclose to the market the source of its selected electricity futures product(s) used for FHP. In the event that an ERCOT-selected electricity futures product(s) becomes unavailable or unsuitable for the intended purpose, ERCOT will select a substitute electricity futures product(s). ERCOT shall set the value of RFAF to 1 and DFAF to 1, and provide Notice of this change as soon as practicable, until such time as a substitute electricity futures product(s) is selected and implemented by ERCOT. ERCOT will notify Market Participants of any change in the electricity futures product(s) at least 60 days prior to the beginning of their use. In the event that 60 days’ Notice cannot be given, ERCOT will notify Market Participants as soon as practicable prior to use. |
| *hrh* | None | *Historic Real-Time Hour*⎯An Operating Hour that is settled and used in the most recent RTLE calculation. |
| *nhrh* | None | *Number of Historic Real-Time Hours*⎯Total number of historic Real-Time hours that are settled and used in the most recent RTLE calculation. |
| *i* | None | *Settlement Interval*⎯A 15-minute interval that is part of an Operating Hour. |
| RTSPP*hrh, i, rhub*  | $/MWh | Real-Time Settlement Point Price for *i*th interval that is part of Operating Hour *hrh* for the Settlement Point *rhub*. |
| HRSAP | $/MWh | *Historic Real-Time Settled Average Price*⎯Theaverage historic Real-Time settled price. |
| HDSAP | $/MWh | *Historic Day-Ahead Settled Average Price*⎯The average historic Day-Ahead settled price. |
| *hdh* | None | *Historic Day-Ahead Hour*⎯An Operating Hour that is settled and used in the most recent DALE calculation. |
| *nhdh* | None | *Number of Historic Day-Ahead Hours*⎯Total number of historic day-ahead hours that are settled and used in the most recent DALE calculation. |
| DASPP*hrh, rhub*  | $/MWh | Day-Ahead Settlement Point Price for Operating Hour *hdh* for the Settlement Point *rhub*. |
| RFAF | None | *Real-Time Forward Adjustment Factor.* |
| DFAF | None | *Day-Ahead Forward Adjustment Factor.* |

The above parameters are defined as follows.

| **Parameter** | **Unit** | **Current Value\*** |
| --- | --- | --- |
| *rhub* | None | ERCOT North Hub |
| *RWF1* | None | 1/3 |
| *RWF2* | None | 1/3 |
| *RWF3* | None | 1/3 |
| *DWF1* | None | 1/3 |
| *DWF2* | None | 1/3 |
| *DWF3* | None | 1/3 |
| \* The current value for the parameters referenced in the table above will be recommended by TAC and approved by the ERCOT Board. ERCOT shall update parameter values on the first day of the month following ERCOT Board approval unless otherwise directed by the ERCOT Board. ERCOT shall provide a Market Notice prior to implementation of a revised parameter value. |