

## **5.1 Transmission Congestion Charge Calculation.**

### **5.1.1 Calculation by Office of the Interconnection.**

When the transmission system is operating under constrained conditions, or as necessary to provide third-party transmission provider losses, the Office of the Interconnection shall calculate Transmission Congestion Charges for each Network Service User, Market Participants in the PJM Interchange Energy Market, and each Transmission Customer.

If a dollar-per-MW-hour value is applied in a calculation under this section 5.1 where the interval of the value produced in that calculation is less than an hour, then for purposes of that calculation the dollar-per-MW hour value is divided by the number of Real-time Settlement Intervals in the hour.

### **5.1.2 General.**

The Office of the Interconnection shall calculate Congestion Prices in the form of Day-ahead Congestion Prices and Real-time Congestion Prices for the PJM Region, in accordance with Section 2 of this Schedule.

### **5.1.3 Network Service User and Market Participant Calculations.**

(a) Each Network Service User shall be charged for the increased cost of energy incurred by it during each constrained hour to deliver the output of its firm Generation Capacity Resources or other owned or contracted for resources, its firm bilateral purchases, and its non-firm bilateral purchases as to which it has elected to pay Transmission Congestion Charges.

(b) For each Day-ahead Settlement Interval, Market Participants shall be charged for transmission congestion resulting from all Market Participant Energy Withdrawals scheduled in the Day-ahead Energy Market at the Day-ahead Congestion Prices applicable to each relevant location at which both the Market Participant withdraws energy and such energy is priced.

(c) For each Day-ahead Settlement Interval, Market Participants shall be reimbursed for transmission congestion resulting from all Market Participant Energy Injections scheduled in the Day-ahead Energy Market at the Day-ahead Congestion Prices applicable to each relevant location at which the Market Participant injects energy and such energy is priced.

(d) The day-ahead component of a Market Participant's Transmission Congestion Charge is equal to the difference between the total day-ahead transmission congestion withdrawal charge calculated in subsection (b) and the total day-ahead transmission congestion injection credit calculated in subsection (c).

(e) (i) The amount of energy delivered at each generation bus is determined by revenue meter data if available, or by the State Estimator, if revenue meter data is not available. The total load actually served at each load bus is initially determined by the State Estimator. For

each Electric Distributor that reports hourly net energy flows from metered tie lines and for which all generators within the Electric Distributor's territory report revenue quality, hourly net energy delivered, the total revenue meter load within the Electric Distributor's territory is calculated as the sum of all net import energy flows reported by their tie revenue meters and all net generation reported via generator revenue meters. The amount of load at each of such Electric Distributor's load buses calculated by the State Estimator is then adjusted, in proportion to its share of the total load of that Electric Distributor, in order that the total amount of load across all of the Electric Distributor's load buses matches its total revenue meter calculated load.

(ii) To determine the amount of load served by each LSE in an Electric Distributor's territory, PJM Settlement utilizes the information submitted into PJM's internal energy scheduling tool by LSEs and Electric Distributors for their respective load settlements ("load contract"), including the names of the LSE responsible for serving the load and the Electric Distributor in whose territory the load is located, the number of megawatts of load assigned to the LSE for each hour, the Energy Settlement Area at which load is to be priced, and the start and end dates for the load contract. During the settlements process, load assigned to an LSE at a specified Energy Settlement Area is further assigned to individual load buses included in the Energy Settlement Area, based on the definition for the Energy Settlement Area as defined in Section 31.7 of the PJM Tariff, which specifies the percentage of the Energy Settlement Area that each bus represents, to identify the LSE's hourly megawatts of load at each bus. All megawatts of load assigned to LSEs in an Electric Distributor's territory as described herein are subtracted from the total megawatts of load for which the Electric Distributor is responsible as determined in subsection (e)(i) above.

(iii) Electric Distributors that hold Provider of Last Resort ("POLR") auctions or similar load auctions may direct PJM to automatically assign megawatt hours for which the Electric Distributor is responsible, as determined in subsection (e)(ii) above, to the LSEs whose bids were accepted in the auction ("POLR Suppliers") based on the tranches the POLR Suppliers won in the auction, as a billing service, based on their contracts associated with the POLR load programs. In such case, the POLR Supplier's share of load shall be determined by multiplying the megawatt hours at each bus that were not specifically assigned under load contracts by the percentage of load won by the POLR Supplier in proportion to its share of the total POLR load of the Electric Distributor. This billing service may also apply to Electric Distributors and LSEs that mutually agree upon a transfer of load from the EDC to the LSE based upon a specified percentage of the megawatt hours at each bus that were not specifically assigned under load contracts.

(f) For each Real-time Settlement Interval, Market Participants shall be assessed for Transmission Congestion Charges (positive or negative) in accordance with the following equation:

$$[(A - B) * C] - [(D - E) * C]$$

Where:

A = The Market Participant Energy Withdrawal megawatts in real-time at the location at which both the Market Participant withdraws energy and such energy is priced;

B = The Market Participant Energy Withdrawal megawatts in day-ahead at the location at which both the Market Participant withdraws energy and such energy is priced;

C = Real-time Congestion Price;

D = The Market Participant Energy Injection megawatts in real-time at the location at which both the Market Participant injects energy and such energy is priced; and

E = The Market Participant Energy Injection megawatts in day-ahead at the location at which both the Market Participant injects energy and such energy is priced.

- (g) The Revenue Data for Settlements determined for each Real-time Settlement Interval in accordance with section 3.1A of this Schedule shall be used in determining the real-time Market Participant Energy Withdrawals and Market Participant Energy Injections used to calculate Transmission Congestion Charges under subsection (f).

#### **5.1.4 Transmission Customer Calculation.**

Each Transmission Customer using Firm Point-to-Point Transmission Service (as defined in the PJM Tariff), each Network Customer, and each Transmission Customer using Non-Firm Point-to-Point Transmission Service (as defined in the PJM Tariff) that has elected to pay Transmission Congestion Charges, shall be charged for the increased cost of energy during the applicable constrained settlement interval for the delivery of energy using such Transmission Service.

- (a) For each Day-ahead Settlement Interval, Transmission Congestion Charges shall be assessed for transmission use scheduled in the Day-ahead Energy Market, calculated as the scheduled amount to be delivered multiplied by the difference between the Day-ahead Congestion Price at the delivery point or the delivery Interface Pricing Point at the boundary of the PJM Region and the Day-ahead Congestion Price at the source point or the source Interface Pricing Point at the boundary of the PJM Region.
- (b) For each Real-time Settlement Interval, Transmission Congestion Charges shall be assessed for real-time transmission use in excess of the amounts scheduled for the applicable interval in the Day-ahead Energy Market, calculated as the excess amount multiplied by the difference between the Real-time Congestion Price at the delivery point or the delivery Interface Pricing Point at the boundary of the PJM Region, and the Real-time Congestion Price at the source point or the source Interface Pricing Point at the boundary of the PJM Region. For each Real-time Settlement Interval, a Transmission Customer shall be paid for Transmission Congestion Charges for real-time transmission use falling below the amounts scheduled for the applicable interval in the Day-ahead Energy Market, calculated as the shortfall amount multiplied by the difference between the Real-time Congestion Price at the delivery point or the delivery Interface Pricing Point at the boundary of the PJM Region, and the Real-time Congestion Price at the source point or the source Interface Pricing Point at the boundary of the PJM Region.

#### **5.1.4A Transaction Calculation.**

Each Market Participant entering into transactions in the PJM Interchange Energy Markets shall be charged for the increased cost of energy during the applicable constrained settlement interval for the delivery of energy on the scheduled path.

- (a) For each Day-ahead Settlement Interval, Transmission Congestion Charges shall be assessed for the transaction MWh scheduled in the Day-ahead Energy Market, calculated as the scheduled amount to be delivered multiplied by the difference between the Day-ahead Congestion Price at the sink point and the Day-ahead Congestion Price at the source point.
- (b) For each Real-time Settlement Interval, Transmission Congestion Charges shall be assessed for real-time MWh in excess of the amounts scheduled for the applicable interval in the Day-ahead Energy Market, calculated as the excess amount multiplied by the difference between the Real-time Congestion Price at the sink point and the Real-time Congestion Price at the source point. Such Market Participant shall be paid for Transmission Congestion Charges for real-time MWh falling below the amounts scheduled for the applicable interval in the Day-ahead Energy Market, calculated as the shortfall amount multiplied by the difference between the Real-time Congestion Price at the sink point and the Real-time Congestion Price at the source point. The Revenue Data for Settlements determined for each Real-time Settlement Interval in accordance with section 3.1A of this Schedule shall be used in determining the real-time transactions used to calculate Transmission Congestion Charges under this subsection (b).

#### **5.1.5 Operating Margin Customer Calculation.**

Each Control Area purchasing Operating Margin shall be assessed Transmission Congestion Charges for any increase in the cost of energy resulting from the provision of Operating Margin. The Transmission Congestion Charge shall be the amount of Operating Margin purchased in the applicable settlement interval multiplied by the difference in the Locational Marginal Price at what would be the delivery Interface Pricing Point and the Locational Marginal Price at what would be the source Interface Pricing Point, if the operating contingency that was the basis for the purchase of Operating Margin had occurred in that hour. Operating Margin may be allocated among multiple source and delivery Interface Pricing Points in accordance with an applicable load flow study.

#### **5.1.6 Transmission Loading Relief Customer Calculation.**

- (a) Each Transmission Loading Relief Customer shall be assessed Transmission Congestion Charges for any increase in the cost of energy in the PJM Region resulting from its energy schedules over contract paths outside the PJM Region during Transmission Loading Relief.

(b) The Transmission Congestion Charge shall be the total amount of energy specified in such energy schedules multiplied by the difference between a Locational Marginal Price calculated by the Office of the Interconnection for the energy schedule source location specified in the NERC Interchange Distribution Calculator and a Locational Marginal Price calculated by the Office of the Interconnection for the energy schedule sink location specified in the NERC Interchange Distribution Calculator. Transmission Congestion Charges that are less than zero shall be set equal to zero for Transmission Loading Relief Customers.

(c) The Office of the Interconnection will determine the Locational Marginal Prices at the energy schedule source and sink locations external to PJM with reference to and based solely on the prices of energy in the PJM Region and at the Interface Pricing Points between adjacent Control Areas and the PJM Region and the system conditions and actual power flow distributions as described by the PJM State Estimator program. The Office of the Interconnection will determine the Locational Marginal Prices at the external energy schedule source and sink locations and the resulting Congestion Charge based on the portion of the energy schedule that flows through the PJM Region as reflected by the flow distributions from the PJM State Estimator program.

**5.1.7 Reserved.**