



Undefined Regulation Mileage Ratio Calculation

Problem / Opportunity Statement

The owner of each Regulation resource that actively follows PJM’s regulation signals and instructions, will be credited for Regulation performance by multiplying the assigned MWs by the Regulation market performance clearing price, by the ratio between the requested mileage for the Regulation dispatch signal assigned to the Regulation resource and the Regulation dispatch signal assigned to the traditional resources and by the Regulation resource’s actual performance score.

As a formula:

$$\text{Regulation Resource Regulation Market Performance Clearing Price (RMPCP) Credit} = \\ 5\text{-min integrated Regulation MW} \times \text{Five Minute Actual Performance Score} \times \text{Mileage Ratio} \times \text{Five minute RMPCP} / 12$$

Where:

$$\text{Mileage Ratio (RegD)} = \text{RegD Hourly Mileage} / \text{RegA Hourly Mileage}$$

$$\text{Mileage Ratio (RegA)} = \text{RegA Hourly Mileage} / \text{RegA Hourly Mileage}$$

RegA Mileage is the movement of the RegA signal from interval to interval. PJM has noticed that there are times that the RegA signal is flat or “pegged” for extended periods. PJM has been monitoring this situation and while it is not causing any reliability concerns, it highlights a potential problem in the Regulation Mileage Ratio calculation above.

There is a potential for the RegA Mileage to be zero for a given hour indicating that the RegA signal has not moved for the entire hour. This sets up a “divide by zero” error in the calculation of the Mileage Ratio. This is an undefined solution which in turn could make the RMPCP credit undefinable. This issue does not impact the Regulation Market clearing or operation, but only the RMPCP credit calculation.

PJM believes this potential undefinable solution needs to be corrected in order to properly calculate Regulation Market credits.