Mileage Ratio Issue

MIC August 11, 2021 IMM



- The IMM proposes a cap of 5.5 on the realized mileage ratio in all hours.
- The cap would eliminate the current undefined mileage ratio result.
- The cap would reduce the market distortion that results from the use of mileage ratios when they incorrectly represent regulation output.
- Based on data from January 1, 2020, through March 31, 2021 this cap would affect about 50 percent of hours.





- RegA resources are paid (on a performance score adjusted basis):
 - RegA MW x RMCCP + RegA MW x RMPCP.
- RegD resources are paid (on a performance score adjusted basis):
 - (RegD MW x RMCCP) + [(RegD MW x RMPCP) x Mileage Ratio].
 - Mileage Ratio = (Mileage of RegD)/(Mileage of RegA)





- RegA and RegD signals are interdependent.
- Reg A moves to maintain ACE and to support the 30 minute conditional neutrality of RegD.
- The RegD signal is set equal to the difference between ACE and RegA
- The combination of the RegA and RegD signal maintains ACE.
- There are times when the RegA signal is for max output (pegging) while RegD signal moves.





- The RegA signal to support the conditional neutrality of RegD can cause large and/or undefined values for the mileage ratio (mileage D/mileage A).
- When RegA is pegged for a full hour (mileage of Reg A = 0), the mileage ratio is undefined.
- Mileage ratio is also distorted when RegA is not pegged for full hour.



5

- The mileage ratio is not a measure of relative work done for purposed of supporting ACE control, as the full interaction between the A and D signals controls ACE.
- When pegged, RegA is supporting ACE control (per the signal design) and it also supporting the conditional neutrality of the RegD signal.



- The relative contribution to regulation is measured by the MRTS or MBF, not the mileage ratio.
- The MRTS/MBF is used for the relative valuation of the RegA and RegD in the market clearing and the setting of price, but not the market settlement.



©2021

Mileage Ratio Statistics: January 1, 2020, to March 31, 2021 (Cap at 1.0)

Full Range Stati	stics (no limit	ts or caps	on mileage	or mileag	e ratios)	
	RegA	RegD	Mileage		\$/Reg A	\$/Reg D
Metric	Mileage	mileage	Ratio	MBF	MW	MW
Minimum	0.00	1.29	0.65	0.65	0.00	0.00
Maximum	14.29	59.71	9,999.00	1.94	967.86	969.97
Median	5.29	29.13	5.47	0.94	9.57	12.46
Mean	5.43	29.08	7.39	0.71	13.65	16.71
Statistics if Max	Mileage Ratio	o Limited t	0	1		
Statistics if Max	Mileage Ratio RegA	o Limited t RegD	o Mileage	1	\$/Reg A	\$/Reg D
Statistics if Max Metric	Mileage Ratio RegA Mileage	o Limited t RegD mileage	o Mileage Ratio	1 MBF	\$/Reg A MW	\$/Reg D MW
Statistics if Max Metric Minimum	Mileage Ratio RegA Mileage 0.00	o Limited t RegD mileage 1.29	o Mileage Ratio 0.65	1 MBF 0.65	\$/Reg A MW 0.00	\$/Reg D MW 0.00
Statistics if Max Metric Minimum Maximum	Mileage Ratio RegA Mileage 0.00 14.29	o Limited t RegD mileage 1.29 59.71	o Mileage Ratio 0.65 1.00	1 MBF 0.65 1.94	\$/Reg A MW 0.00 967.86	\$/Reg D MW 0.00 967.86
Statistics if Max Metric Minimum Maximum Median	Mileage Ration RegA Mileage 0.00 14.29 5.29	o Limited t RegD mileage 1.29 59.71 29.13	o Mileage Ratio 0.65 1.00 1.00	1 MBF 0.65 1.94 0.94	\$/Reg A MW 0.00 967.86 9.57	\$/Reg D MW 0.00 967.86 9.57

Percent of Hours

Affected 99.99%



Mileage Ratio Statistics: January 1, 2020, to March 31, 2021 (Cap at 5.5)

Full Range Statistics (no limits or caps on mileage or mileage ratios)							
	RegA	RegD	Mileage		\$/Reg A	\$/Reg D	
Metric	Mileage	mileage	Ratio	MBF	MW	MW	
Minimum	0.00	1.29	0.65	0.65	0.00	0.00	
Maximum	14.29	59.71	9,999.00	1.94	967.86	969.97	
Median	5.29	29.13	5.47	0.94	9.57	12.46	
Mean	5.43	29.08	7.39	0.71	13.65	16.71	
Statistics if Max	Mileage Rat	tio Limited	to	5.5			
						+ / - -	
	RegA	RegD	Mileage		\$/Reg A	\$/Reg D	
Metric	RegA Mileage	RegD mileage	Mileage Ratio	MBF	\$/Reg A MW	\$/Reg D MW	
Metric Minimum	RegA Mileage 0.00	RegD mileage 1.29	Mileage Ratio 0.65	MBF 0.65	\$/Reg A MW 0.00	\$/Reg D MW 0.00	
<mark>Metric</mark> Minimum Maximum	RegA Mileage 0.00 14.29	RegD mileage 1.29 59.71	Mileage Ratio 0.65 5.50	MBF 0.65 1.94	\$/Reg A MW 0.00 967.86	\$/Reg D MW 0.00 969.53	
<mark>Metric</mark> Minimum Maximum Median	RegA Mileage 0.00 14.29 5.29	RegD mileage 1.29 59.71 29.13	Mileage Ratio 0.65 5.50 5.47	MBF 0.65 1.94 0.94	\$/Reg A MW 0.00 967.86 9.57	\$/Reg D MW 0.00 969.53 12.02	
Metric Minimum Maximum Median Mean	RegA Mileage 0.00 14.29 5.29 5.43	RegD mileage 1.29 59.71 29.13 29.08	Mileage Ratio 0.65 5.50 5.47 4.87	MBF 0.65 1.94 0.94 0.71	\$/Reg A MW 0.00 967.86 9.57 13.65	\$/Reg D MW 0.00 969.53 12.02 16.22	

Percent of Hours

Affected

49.66%

©2021

9



PJM's Proposal

- PJM proposes to replace the RegA mileage with a value of 0.1 in hours where the RegA mileage for the hour is zero.
- The PJM proposal would not reduce the market distortion that results from the use of mileage ratios when they incorrectly represent regulation output.
- Based on data from January 1, 2020, through March 31, 2021 the PJM proposal would have allowed a RegA mileage ratio of 673.05.



Mileage Ratio Statistics: January 1, 2020, to March 31, 2021 (RegA mileage set to 0.1 when RegA mileage = 0)

Full Range Statis	stics (no limit	ts or caps on	mileage or i	mileage	ratios)	
	RegA	RegD	Mileage		\$/RegA	\$/RegD
From January ⁻	mileage	mileage	ratio	MBF	MW	MW
MIN	0.00	1.29	0.65	0.65	0.00	0.00
MAX	14.29	59.71	9,999.00	1.94	967.86	969.97
MEDIAN	5.29	29.13	5.47	0.94	9.57	12.46
MEAN	5.43	29.08	7.39	0.71	13.65	16.71
Statistics if RegA	Mileage set	to 0.1 when	RegA mileag	ge = 0		
	— •					
	RegA	RegD	Mileage		\$/RegA	\$/RegD
From January [·]	RegA mileage	RegD mileage	Mileage ratio	MBF	\$/RegA MW	\$/RegD MW
From January [·] MIN	RegA mileage 0.03	RegD mileage 1.29	Mileage ratio 0.65	MBF 0.65	\$/RegA MW 0.00	\$/RegD MW 0.00
From January [·] MIN MAX	RegA mileage 0.03 14.29	RegD mileage 1.29 59.71	Mileage ratio 0.65 673.05	MBF 0.65 1.94	\$/RegA MW 0.00 967.86	\$/RegD MW 0.00 969.97
From January [·] Min Max Median	RegA mileage 0.03 14.29 5.29	RegD mileage 1.29 59.71 29.13	Mileage ratio 0.65 673.05 5.47	MBF 0.65 1.94 0.94	\$/RegA MW 0.00 967.86 9.57	\$/RegD MW 0.00 969.97 12.46
From January [·] Min Max Median Mean	RegA mileage 0.03 14.29 5.29 5.43	RegD mileage 1.29 59.71 29.13 29.08	Mileage ratio 0.65 673.05 5.47 6.49	MBF 0.65 1.94 0.94 0.71	\$/RegA MW 0.00 967.86 9.57 13.65	\$/RegD MW 0.00 969.97 12.46 16.71
From January ⁻ MIN MAX MEDIAN MEAN Percent of Hours	RegA mileage 0.03 14.29 5.29 5.43	RegD mileage 1.29 59.71 29.13 29.08	Mileage ratio 0.65 673.05 5.47 6.49	MBF 0.65 1.94 0.94 0.71	\$/RegA MW 0.00 967.86 9.57 13.65	\$/RegD MW 0.00 969.97 12.46 16.71
From January [·] MIN MAX MEDIAN MEDIAN Percent of Hours Affected	RegA mileage 0.03 14.29 5.29 5.43	RegD mileage 1.29 59.71 29.13 29.08	Mileage ratio 0.65 673.05 5.47 6.49	MBF 0.65 1.94 0.94 0.71	\$/RegA MW 0.00 967.86 9.57 13.65	\$/RegD MW 0.00 969.97 12.46 16.71

Monitoring Analytics, LLC 2621 Van Buren Avenue Suite 160 Eagleville, PA 19403 (610) 271-8050

MA@monitoringanalytics.com www.MonitoringAnalytics.com

12



