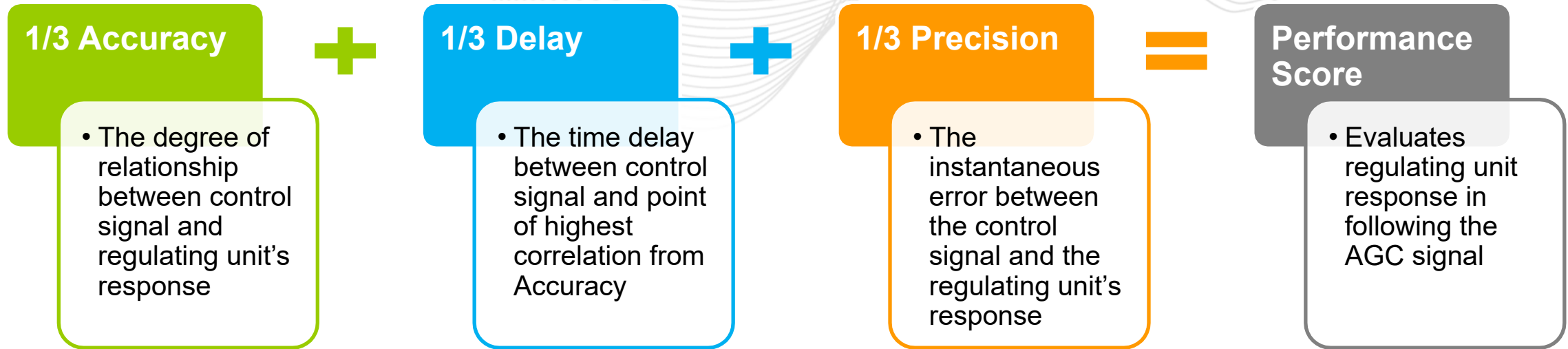




RMDSTF Proposal on Performance Score

Ilyana Dropkin, Senior Engineer
Performance Compliance
RMDSTF
February 22, 2023



- Performance score equations are used on a 10-second interval basis
- Each component of performance score is averaged for the hour for overall performance score

Precision Calculation:

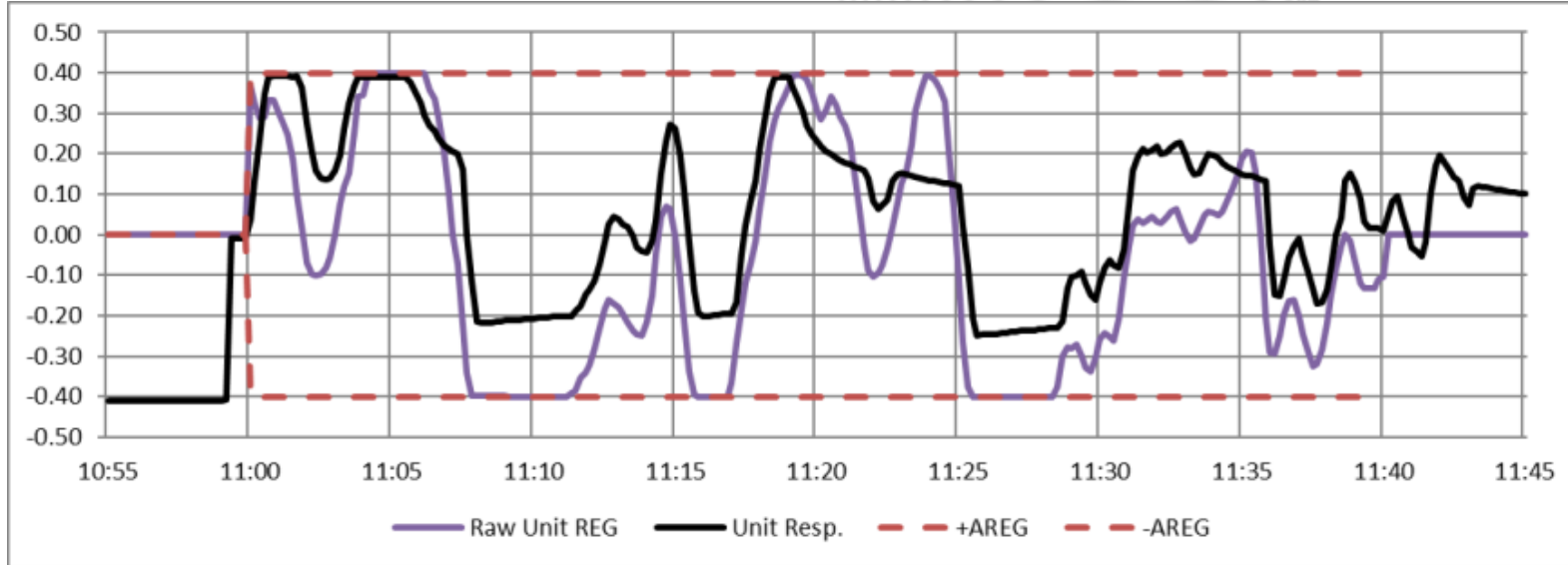
$$\text{Error} = \text{Avg of Abs} \left| \frac{\text{Response} - \text{Regulation Signal}}{\text{Hourly Average Regulation Signal}} \right|$$

$$\text{Precision Score} = 1 - \frac{1}{n} \sum \text{Abs}(\text{Error})$$

- Performance Score:
 - Precision-only Calculation
 - The lowest of the absolute error between the signal at t0 and the response at t0 and t10. The denominator in the precision calculation will be an average of the regulation award and the absolute average hourly signal.

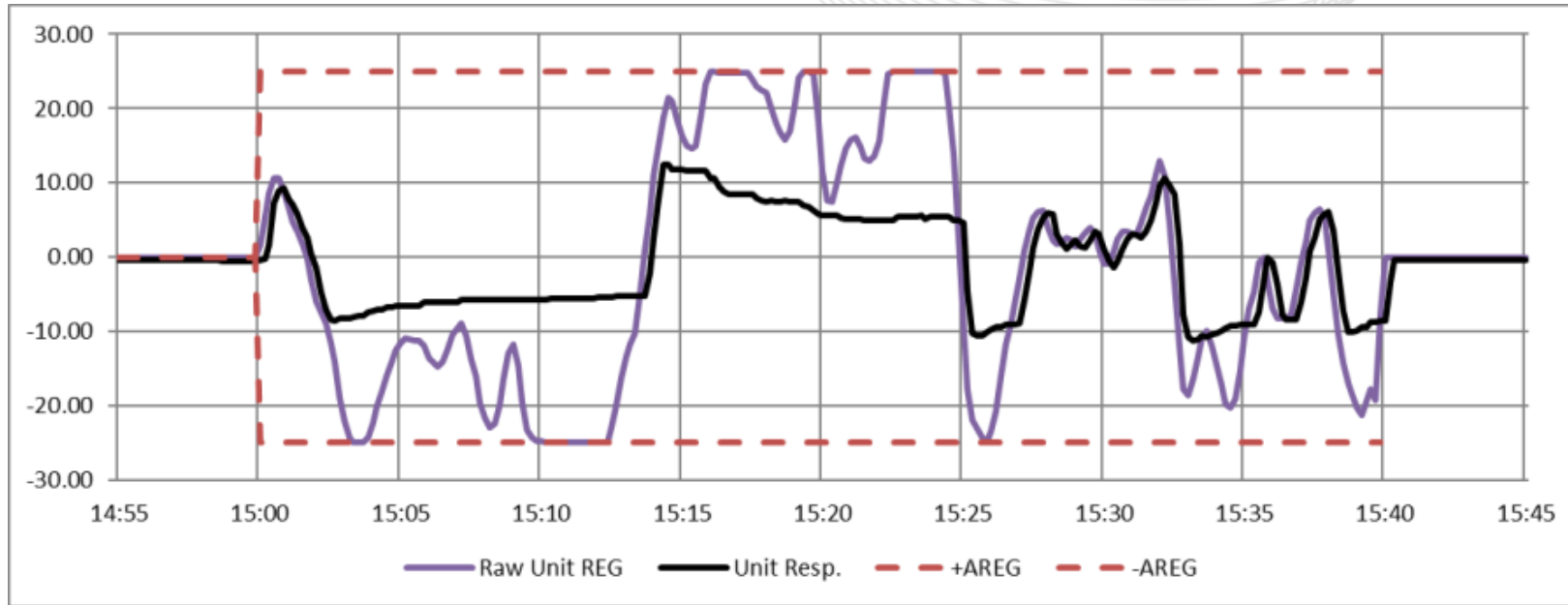
$$Performance\ Score_{10sec} = 1 - MIN_{t0-t10} \left(\frac{Response - Signal}{0.5 * ABSHourlyAvgSignal + 0.5 * AREG} \right)$$

$$Performance\ Score_{hourly} = Average (PerfromanceScore_{10sec})$$



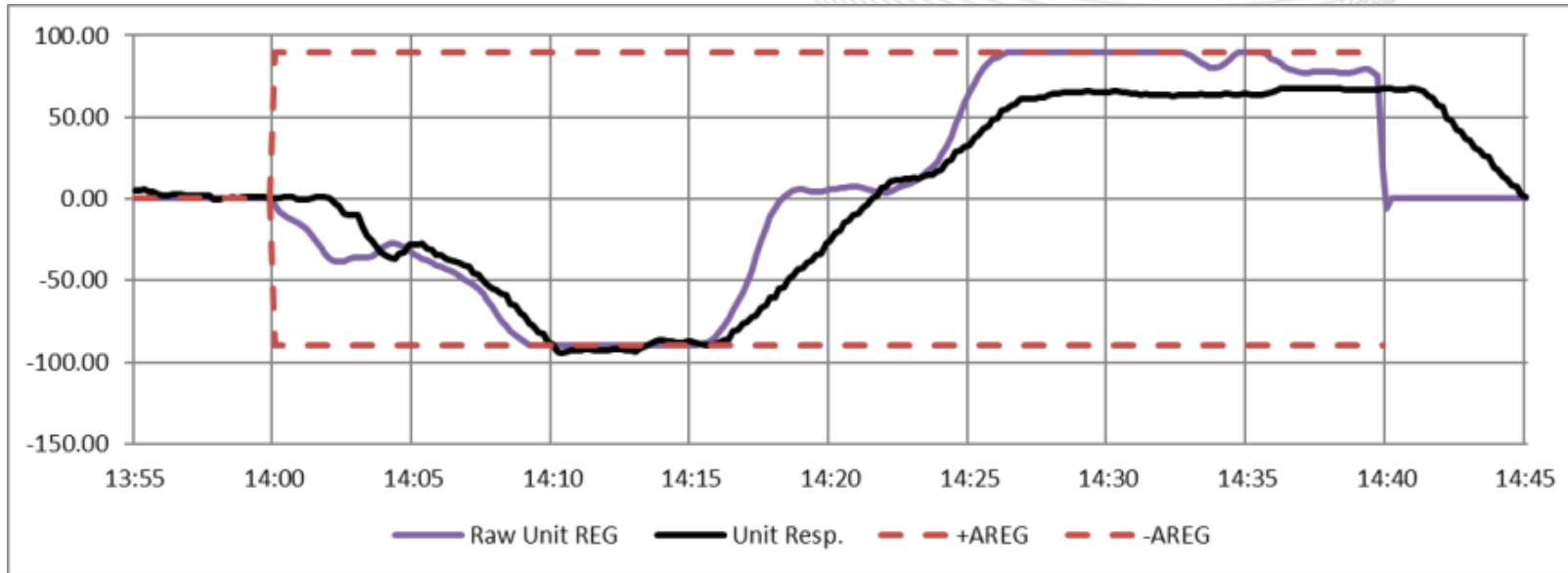
	Score
Status Quo Precision	0.3606
RMISTF Precision	0.5147
Accuracy	0.9202
Delay	0.9997
Performance	0.7601

- Precision Score raised by 0.1541



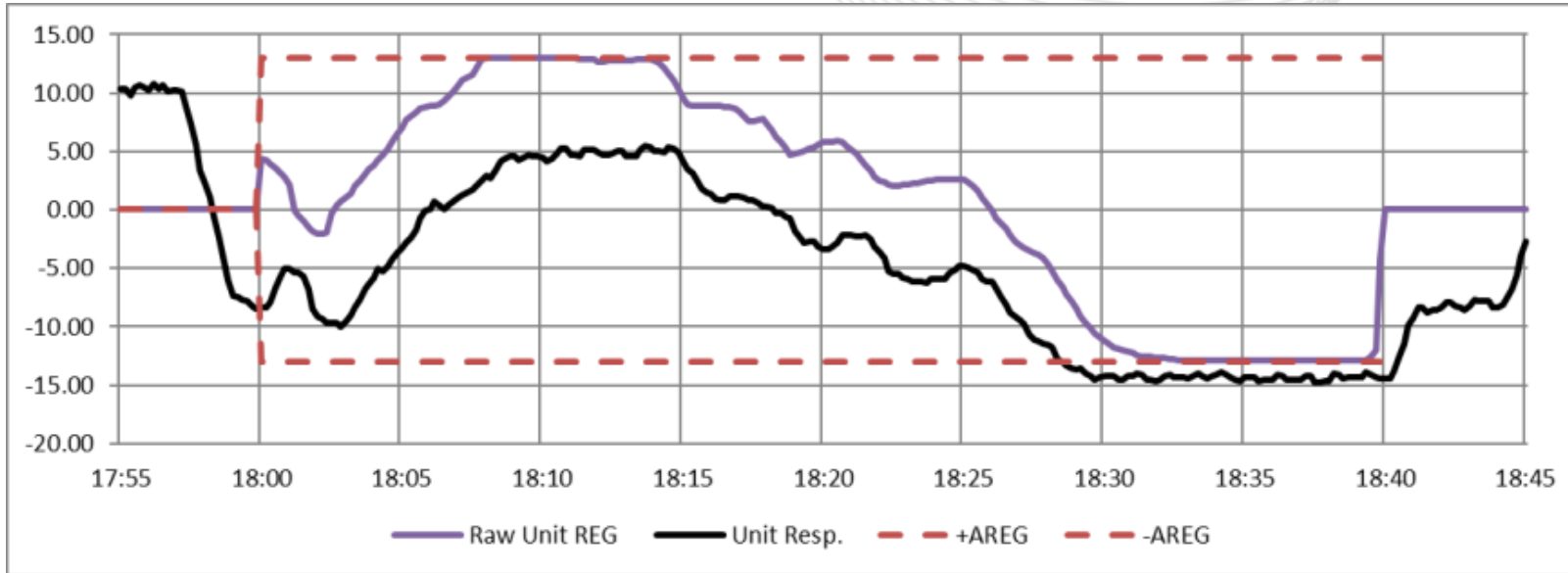
	Score
Status Quo Precision	0.4484
RMISTF Precision	0.5455
Accuracy	0.6950
Delay	0.8573
Performance	0.6669

- Precision Score raised by 0.0971



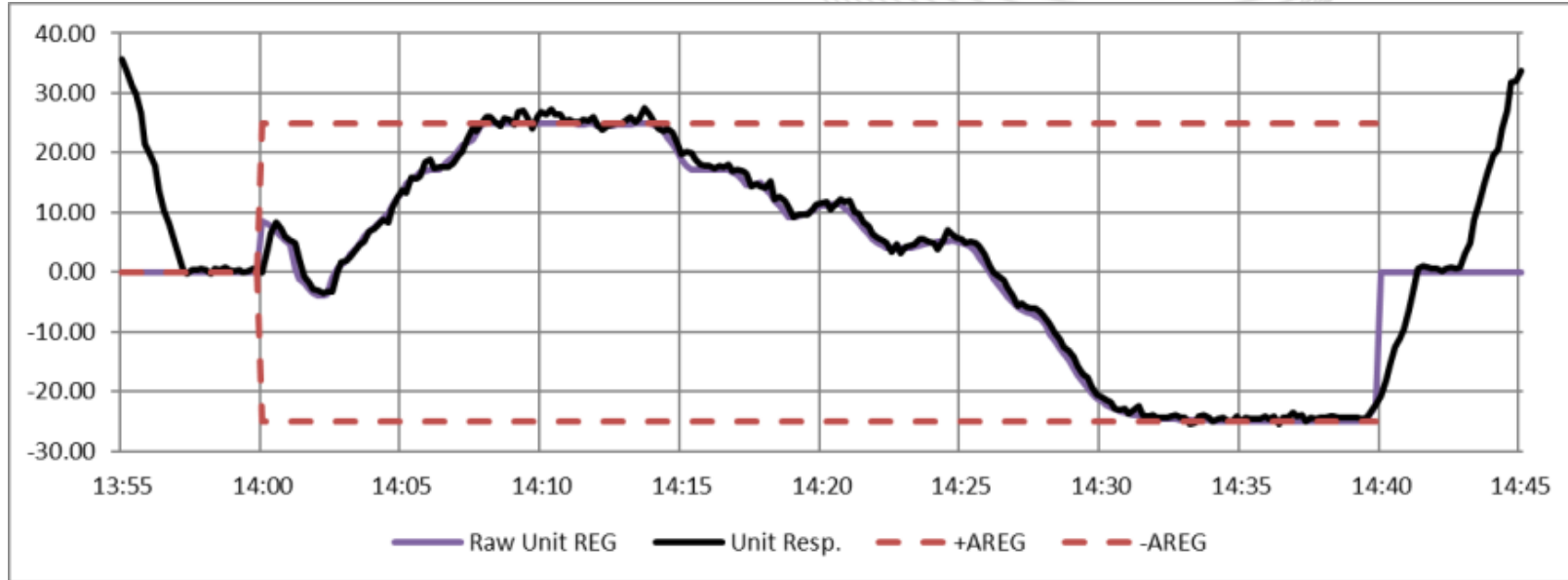
	Score
Status Quo Precision	0.7290
RMISTF Precision	0.7814
Accuracy	0.8338
Delay	0.8959
Performance	0.8196

- Precision Score raised by 0.0524



	Score
Status Quo Precision	0.1962
RMISTF Precision	0.3480
Accuracy	0.9459
Delay	0.9784
Performance	0.7068

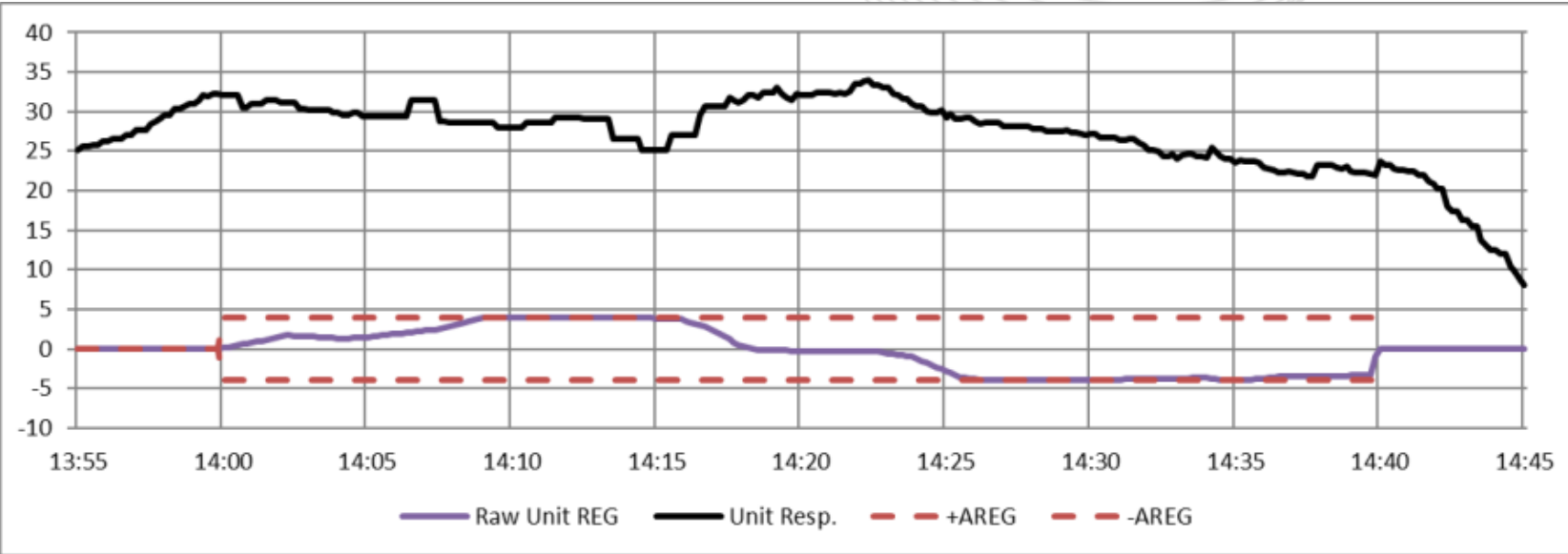
- Precision Score raised by 0.1518



	Score
Status Quo Precision	0.9600
RMISTF Precision	0.9686
Accuracy	0.9805
Delay	1
Performance	0.9802

- Precision Score raised by 0.0086

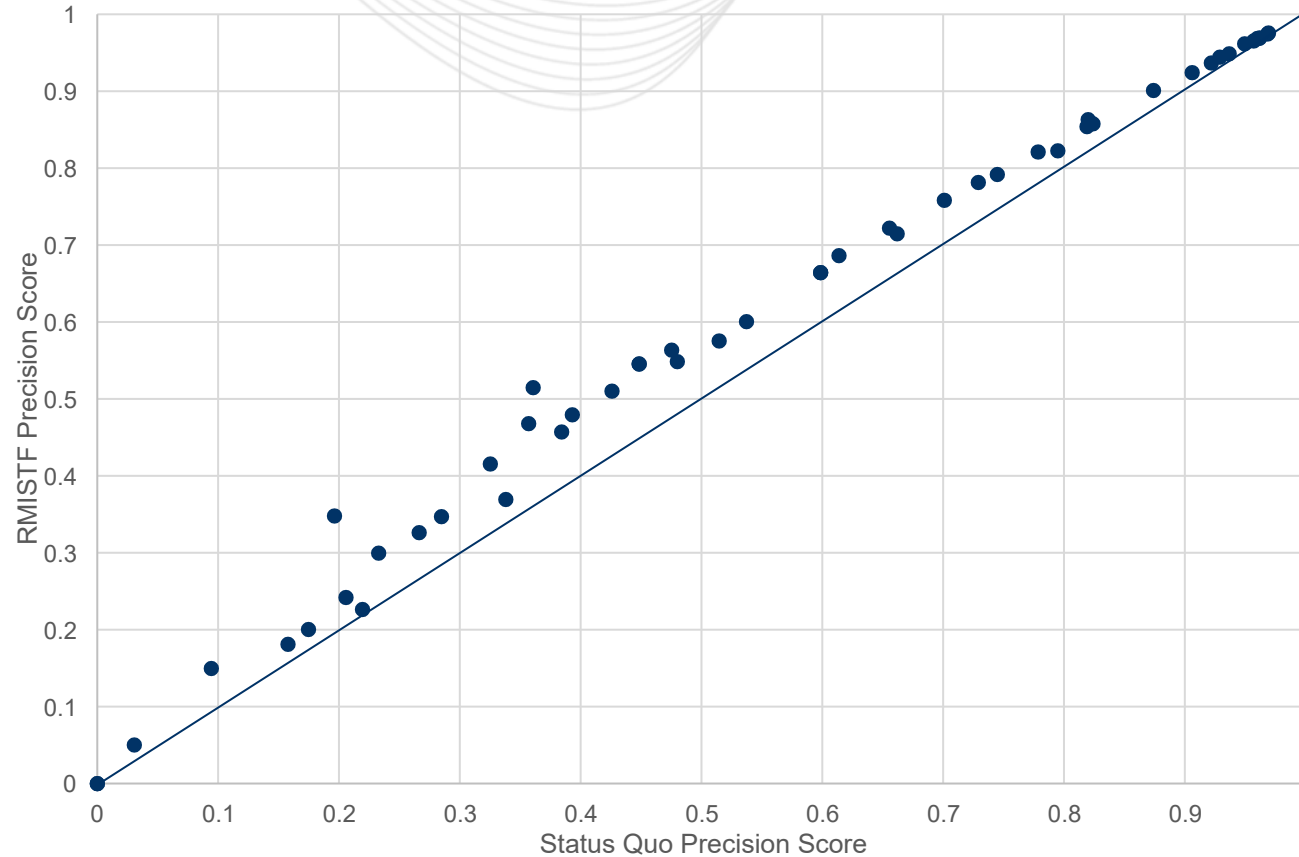
Status Quo Precision vs RMISTF Precision

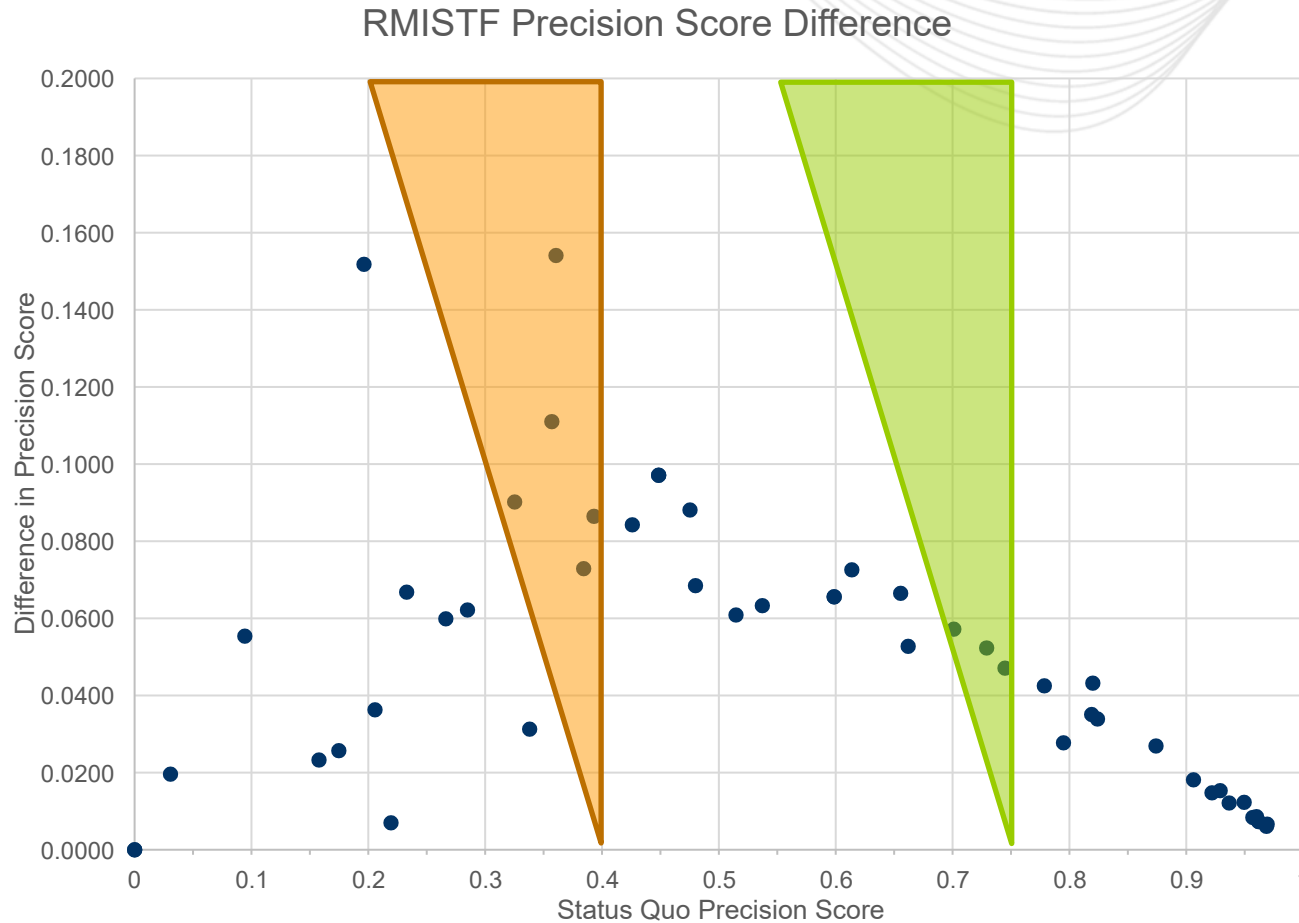


	Score
Status Quo Precision	0
RMISTF Precision	0
Accuracy	0.566
Delay	0.6502
Performance	0.4056

Status Quo Precision vs RMISTF Precision

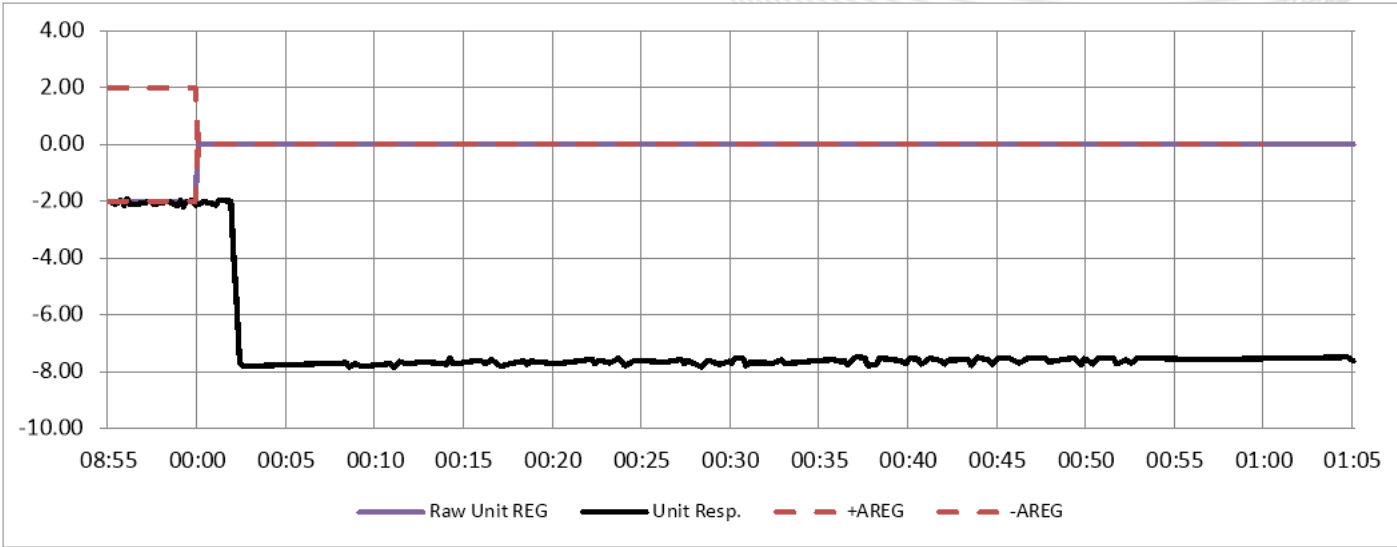
Status Quo vs. RMISTF Precision Score



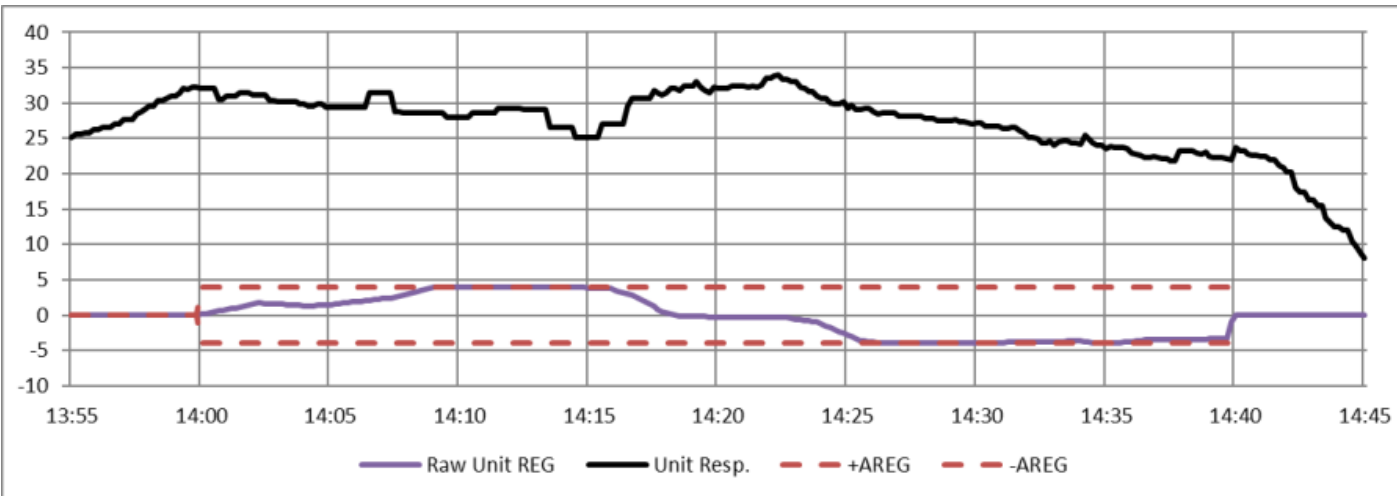


- Resources that no longer fall from regulation market

- Resources that now pass regulation qualification test



	Score
Performance	0.5623
Accuracy	0.6900
Delay	0.8777
Precision	0.0325



	Score
Performance	0.4056
Accuracy	0.5666
Delay	0.6502
Precision	0.0000

- Performance Score:
 - Precision-only Calculation
 - The lowest of the absolute error between the signal at t0 and the response at t0 and t10. The denominator in the precision calculation will be an average of the regulation award and the absolute average hourly signal.

$$Performance\ Score_{10sec} = 1 - MIN_{t0 - t10} \left(\frac{ABS(Response - Signal)}{0.5 * ABSHourlyAvgSignal + 0.5 * AREG} \right)$$

$$Performance\ Score_{Hourly} = Average (Performance\ Score_{10sec})$$

- Accuracy and Delay Scores do not represent accurate performance of regulation resources. These scores artificially inflate the scores when resources perform poorly.
- Status Quo Precision Score is the absolute error between assigned regulation signal and resource response signal.
- RMDSTF Proposal evaluates resource performance more accurately.
 - If a resource follows the AGC signal closely, this resource receives high scores for their performance.
 - If a resource follows the AGC signal poorly, this resource receives low scores for their performance.
 - If a resource attempts to follow the AGC signal, this resource receives partial credits.
- RMDSTF Proposal is less strict than the Status Quo Precision Score, but more accurately represent resource performance than the Status Quo Performance Score.

Facilitator:
Michael Herman
Michael.Herman@pjm.com

Secretary:
Wenzheng Qiu
Wenzheng.Qiu@pjm.com

SME/Presenter:
Ilyana Dropkin,
Ilyana.Dropkin@pjm.com

RMDSTF Proposal on Performance Score



Member Hotline

(610) 666 – 8980

(866) 400 – 8980

custsvc@pjm.com

**PROTECT THE
POWER GRID
THINK BEFORE
YOU CLICK!**



Be alert to
malicious
phishing emails.

Report suspicious email activity to PJM.
(610) 666-2244 / it_ops_ctr_shift@pjm.com

