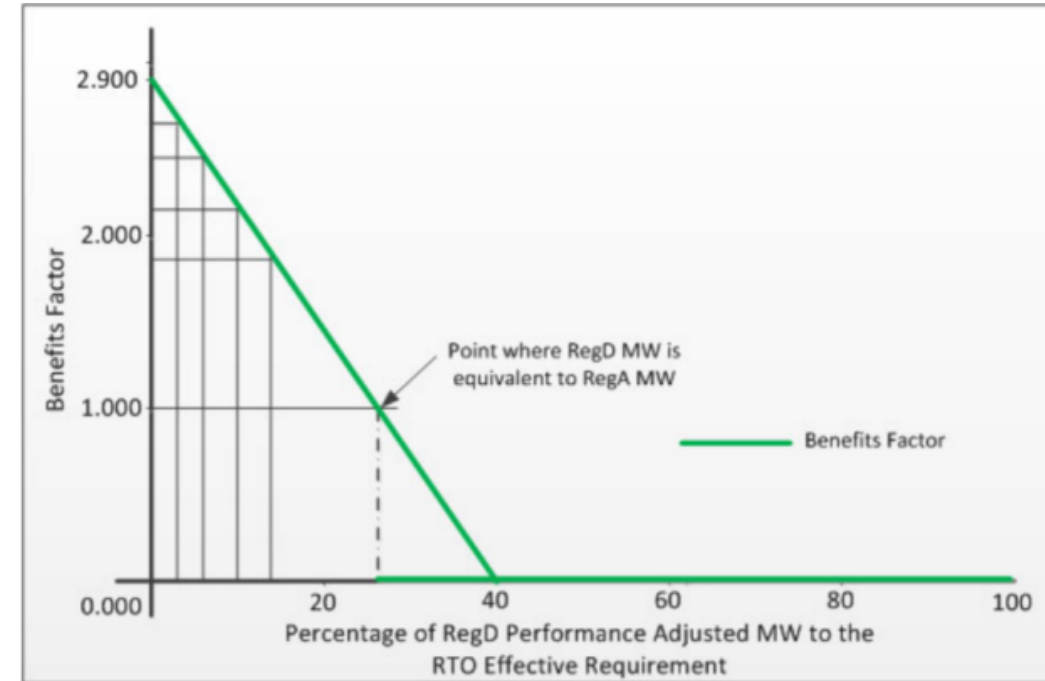


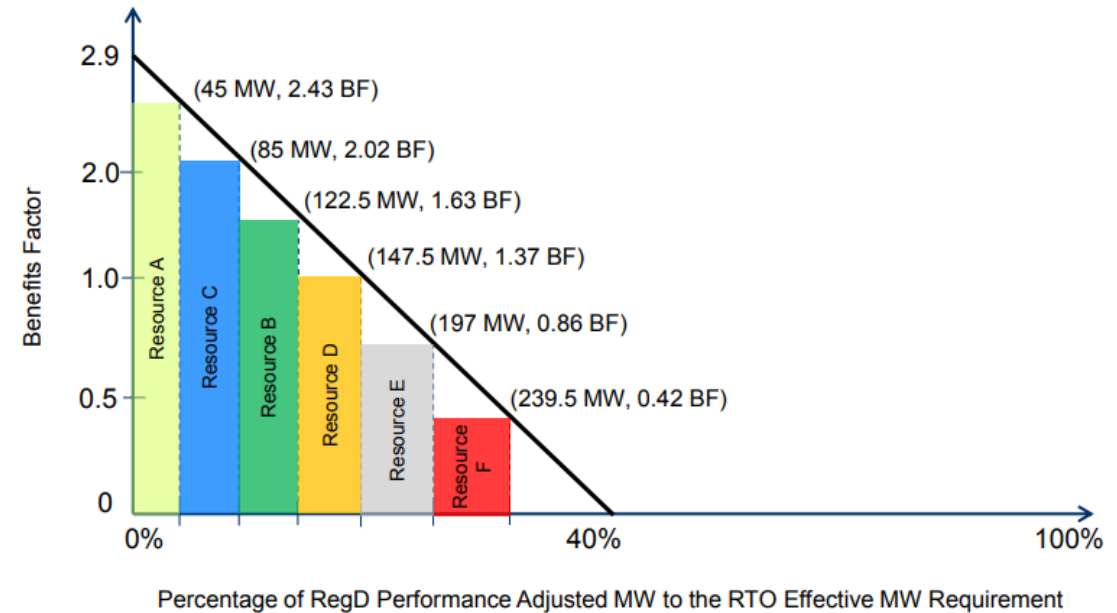
Status Quo and RMISTF review Substitution Curves and Effective MWs

Danielle Croop
Manager, Market Design
RMDSTF
July 26, 2022

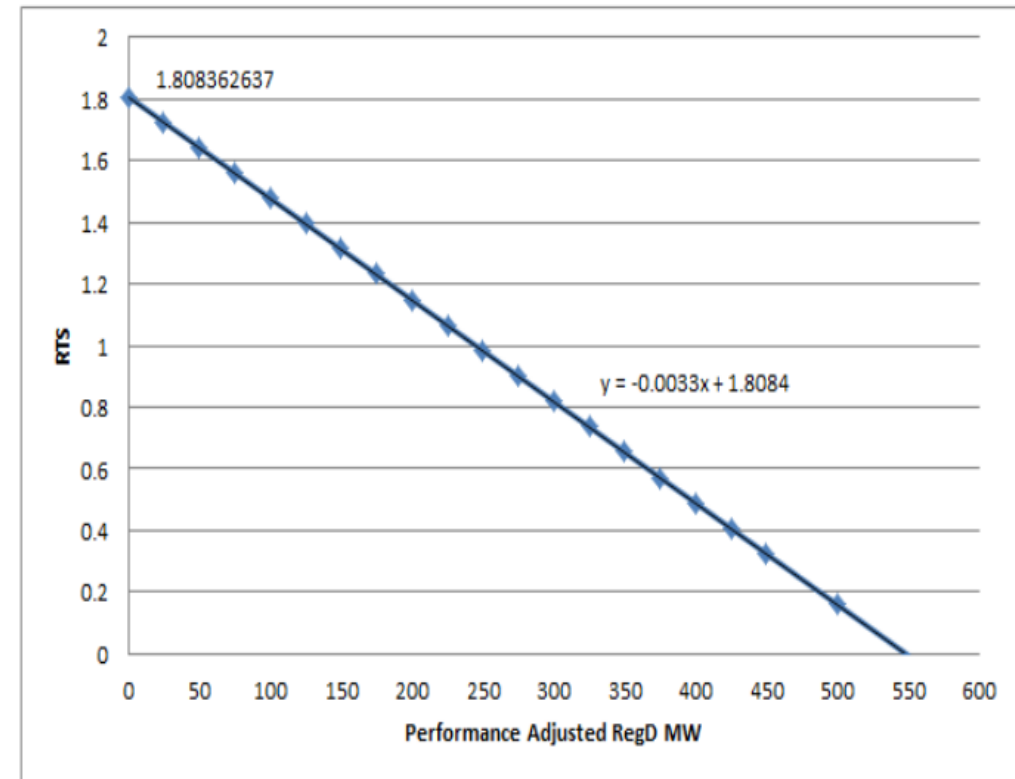
- Defined in PJM Manual 11 Section 3.2.7.6
- Translates a RegD MWs into RegA MWs or Effective MWs. Reflects the rate of substitution between resources following the different regulation signals
- Benefits Factor curve was originally designed with Order 755 implementation, with input from KEMA study on impact of fast responding resources
 - Updated in 2015 out of PJM’s regulation performance issues stakeholder process

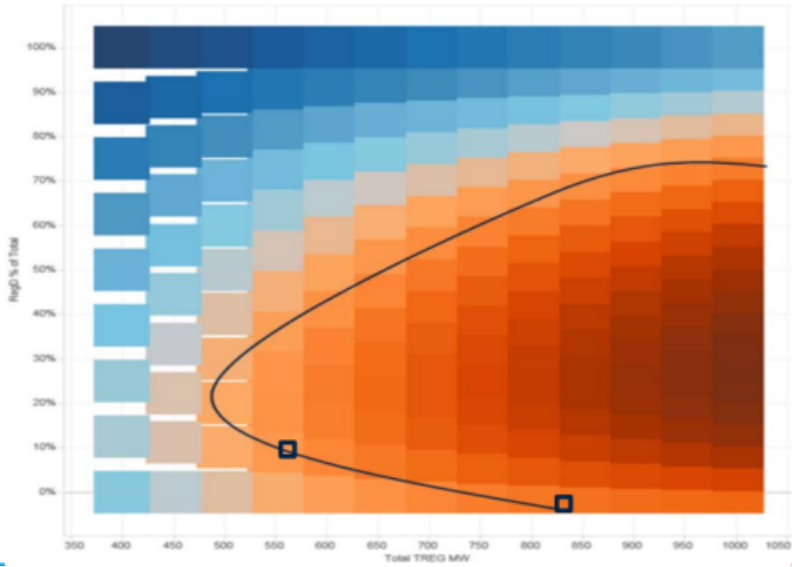


- Effective MW is calculated as the product of Performance Adjusted MW on the X-axis * Benefits Factor value on the Y-axis
 - Does not fully account for area under the curve
 - Less computational burden
- Identified by PJM and IMM as not fully accounting for RegD MWs and a design flaw in RMISTF

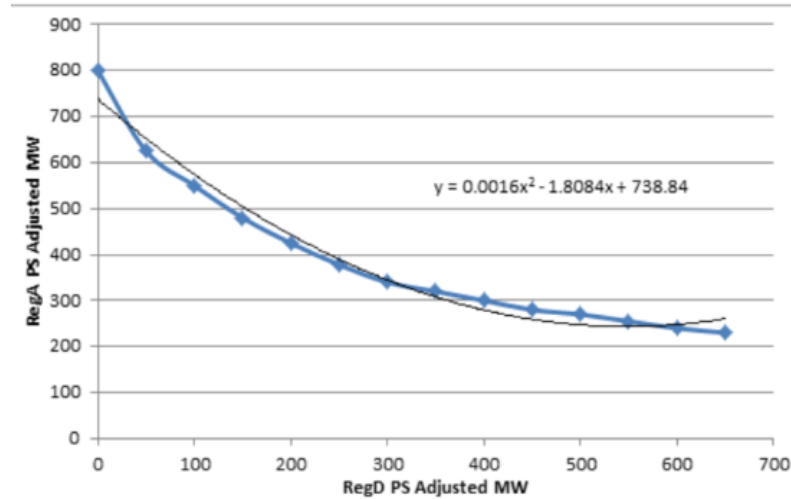


- Represents a defined engineering relationship for a desired operational control for RegA and RegD resources
 - Developed based on PJM analysis and signal definition
 - Optimized commitment of RegA and RegD least-cost solution
- Proposed curves changed seasonally and on/off ramp

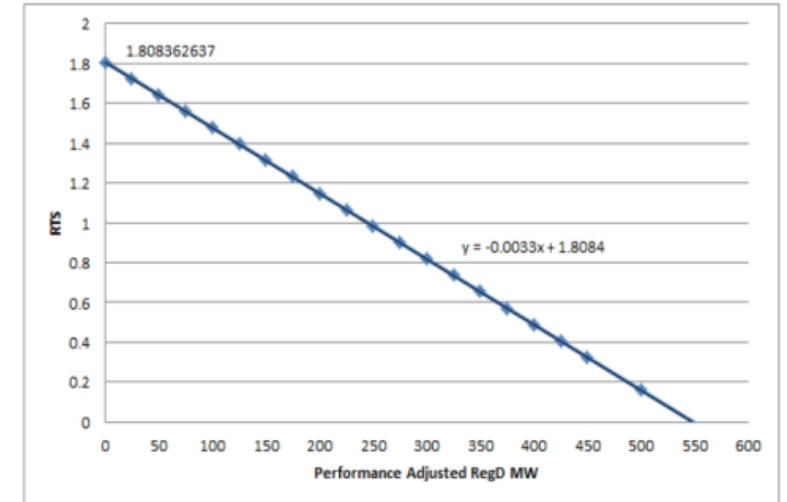




Analysis performed and Isoquants developed for level of ACE control

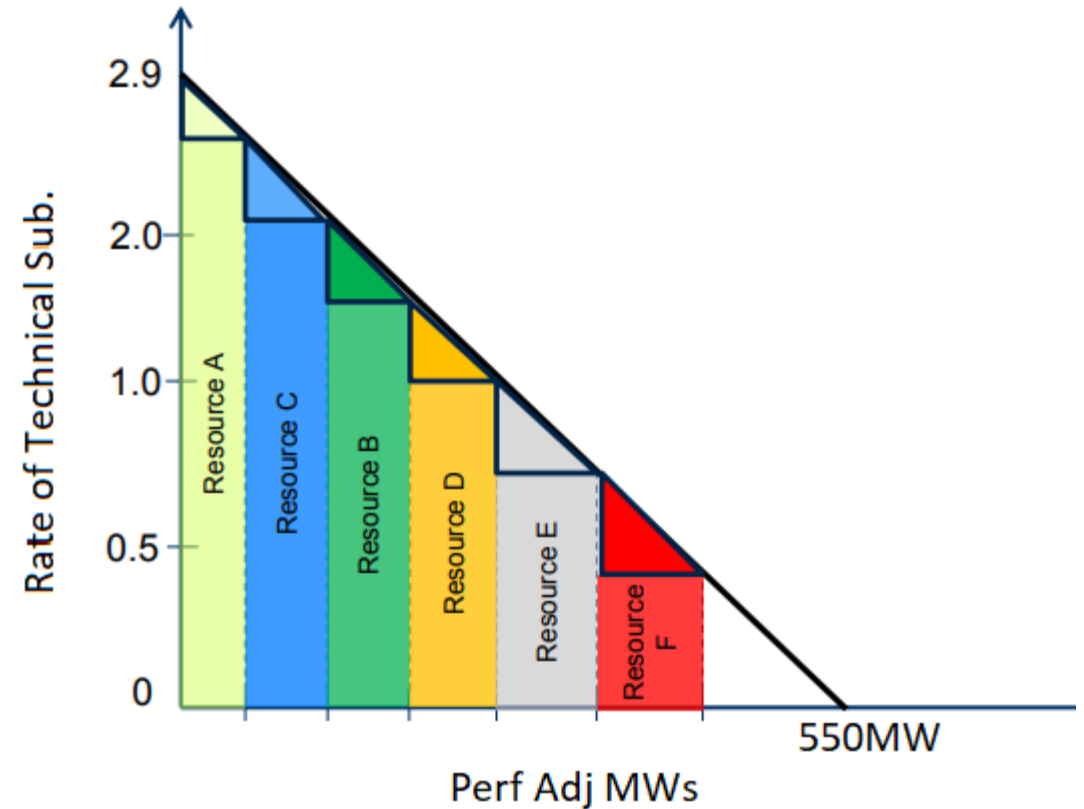


Plot the MW pairs of RegA and RegD



Take the derivative of the RegA - RegD solution curve to define the RTS Curve

- Effective MW is calculated as area under the curve
 - Full valuation of the rate of substitution



Facilitator:
Mike Herman,
Michael.Herman@pjm.com

Secretary:
Amanda Martin,
Amanda.Martin@pjm.com

SME/Presenter:
Danielle Croop,
Danielle.Croop@pjm.com

Regulation Market Design Senior Task Force



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

