

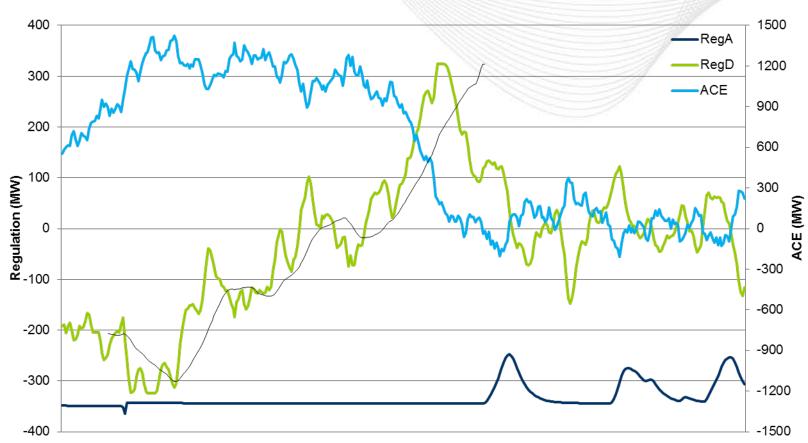
Problem Statement Example(s)

Example 1: 10/20/2014 08:00-09:00

- ACE is low (-760 to -200)
- RegA is in full raise (~210MW)
- RegD is dropping off (~286MW to ~-170MW)
- RegD % 75

Reliability challenges to managing system control can occur during times when there is a large percentage of RegD MWs providing regulation. This issue is caused by the RegD control signal moving in the opposite control direction than desired by dispatch





Problem Statement Example(s)

Example 2: 11/12/2014 18:00-19:00

- ACE is high (-1425 to -690)
- RegA is in full lower (~340MW)
- RegD is ramping up
- (~-320MW to ~320MW)
- RegD % 45

Reliability challenges to managing system control can occur during times when there is a large percentage of RegD MWs providing regulation. This issue is caused by the RegD control signal moving in the opposite control direction than desired by dispatch



Regulation-D Resource Breakdown

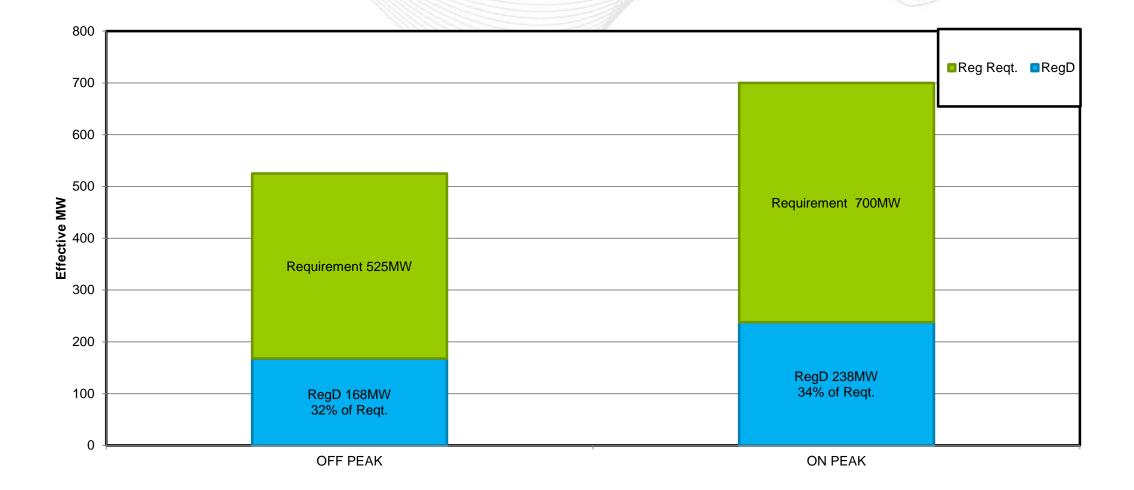
Resource MW breakdown qualified for Regulation D Market

Resource Type	MW
Battery/Storage	136
DSR	14
Hydro	420

*Note: Some Batteries also in DSR

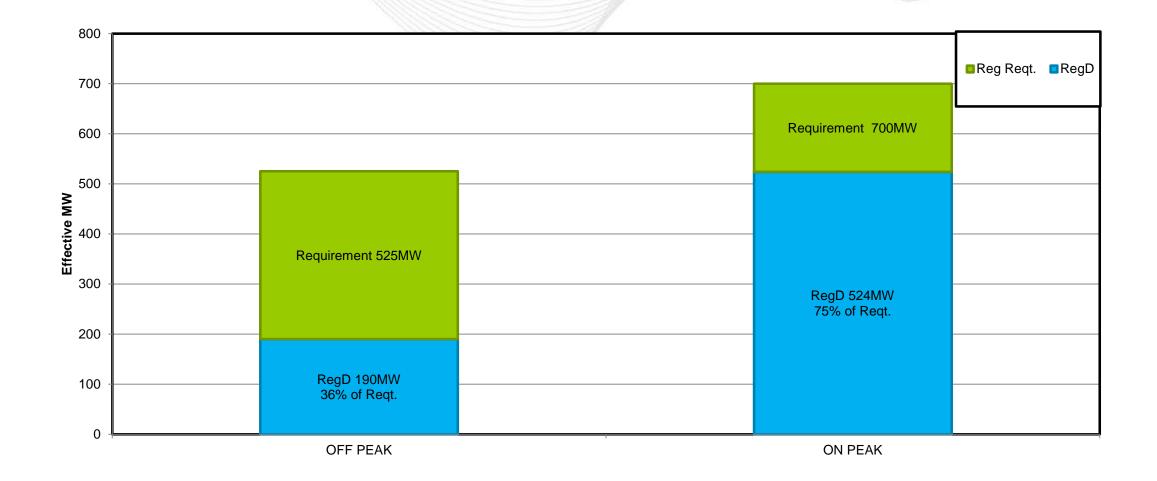


Average Hourly RegD Participation in Regulation





Maximum Hourly RegD Participation in Regulation





Regulation-D On/Off Peak %

RegD On/Off Peak	Average RegD %	Maximum RegD %
On Peak	34	75
Off Peak	32	36