

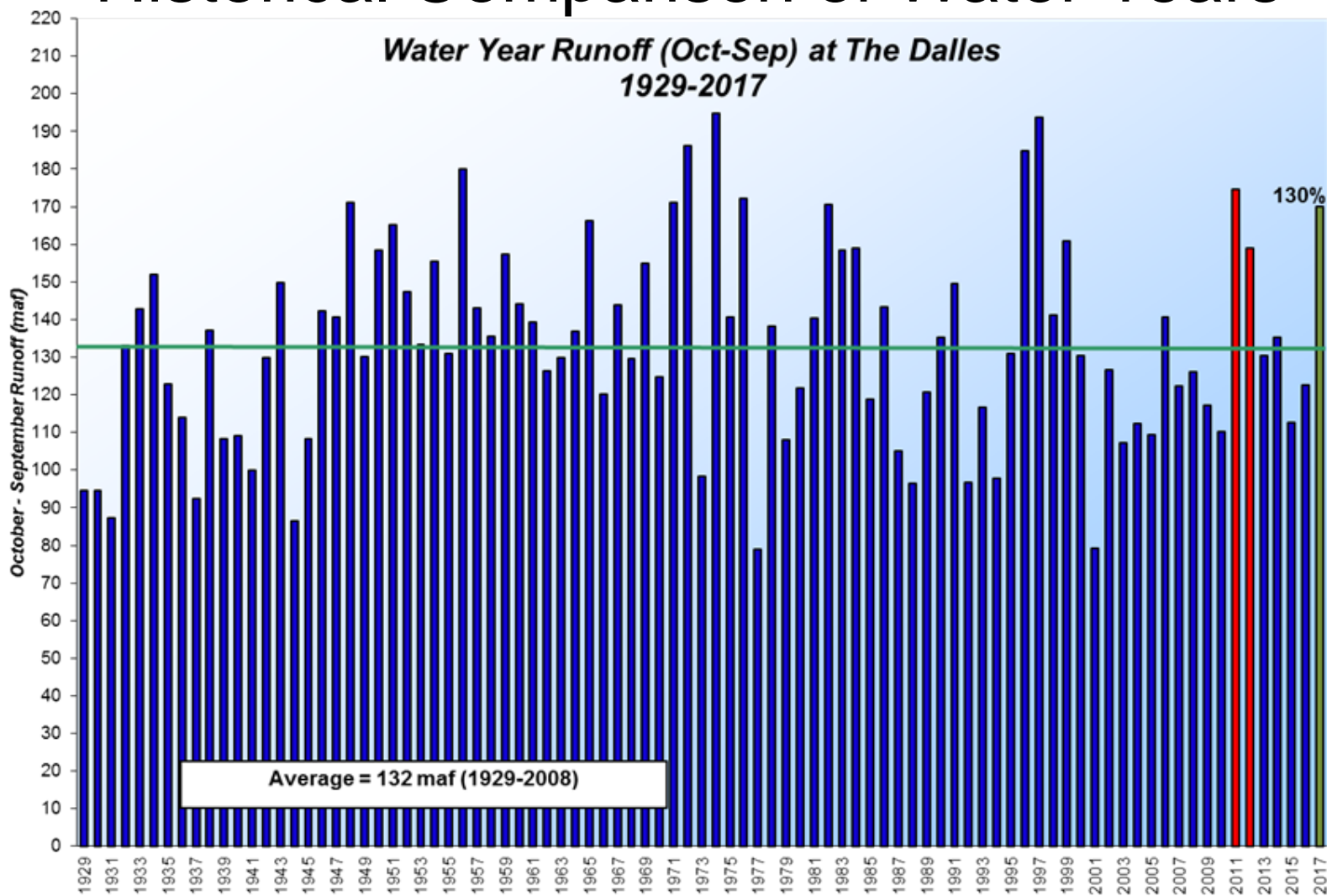
2017 Oversupply Management

Dec. 21, 2017

Factors Contributing to the Implementation of the Oversupply Management Protocol (OMP) in 2017

- Water supply volume was 130% of average. (Slide 4) The projected volume had an unprecedented increase across the spring.
- Early season high flows limited the amount of spill available before hitting TDG limits. This is a high risk period if a similar, early run off were to occur in the future.
- The FCRPS was under Army Corp of Engineers (COE) directed emergency flood control operations starting 3/21/2017 for protecting Portland.
 - COE Total Dissolved Gas (TDG) Reporting: http://pweb.crohms.org/ftppub/water_quality/tdg/
- California installed over 9,000 MW more of metered solar installed since 2012 and had an above average snowpack which resulted in limited ability for BPA to export energy during the daytime.
- AC intertie was derated a few times for maintenance.
 - Intertie Capacity Reporting: <https://transmission.bpa.gov/Business/Operations/Paths/>
 - Retrospective Report with Unused Intertie Capacity
 - (<https://www.bpa.gov/Projects/Initiatives/Oversupply/OversupplyDocuments/2017/Unused%20Intertie%20Capacity%20030117%20to%20063017%20vs2.zip> – See Spreadsheet)
- Columbia Generating station output was reduced as coordinated with project operators before it began its refueling cycle on 5/13/2017.

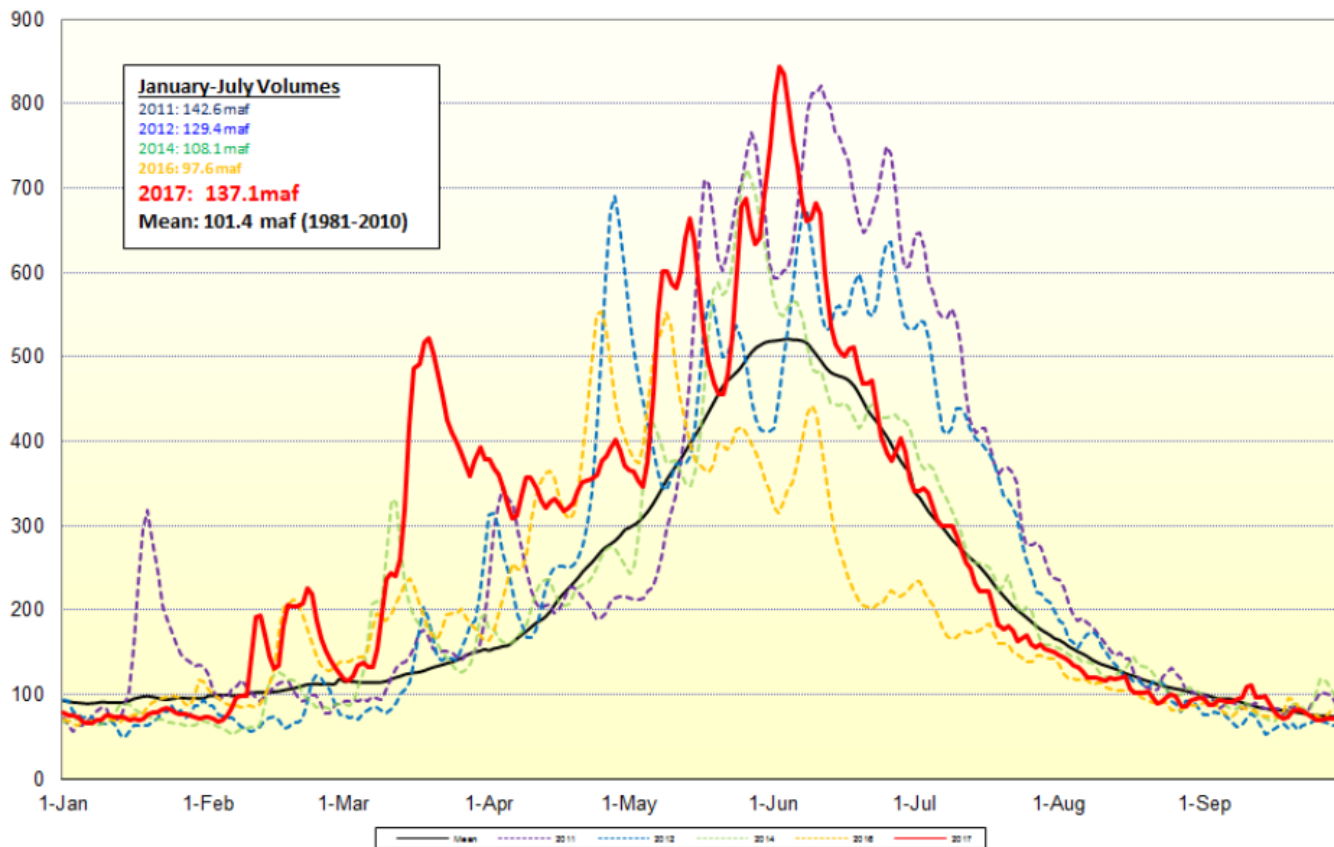
Historical Comparison of Water Years



- Red Bars are the previous years there has been generator displacement.
- 2017 is the 5th largest water year since 1974.

Comparison of Water Years

Natural Flows Comparison at The Dalles

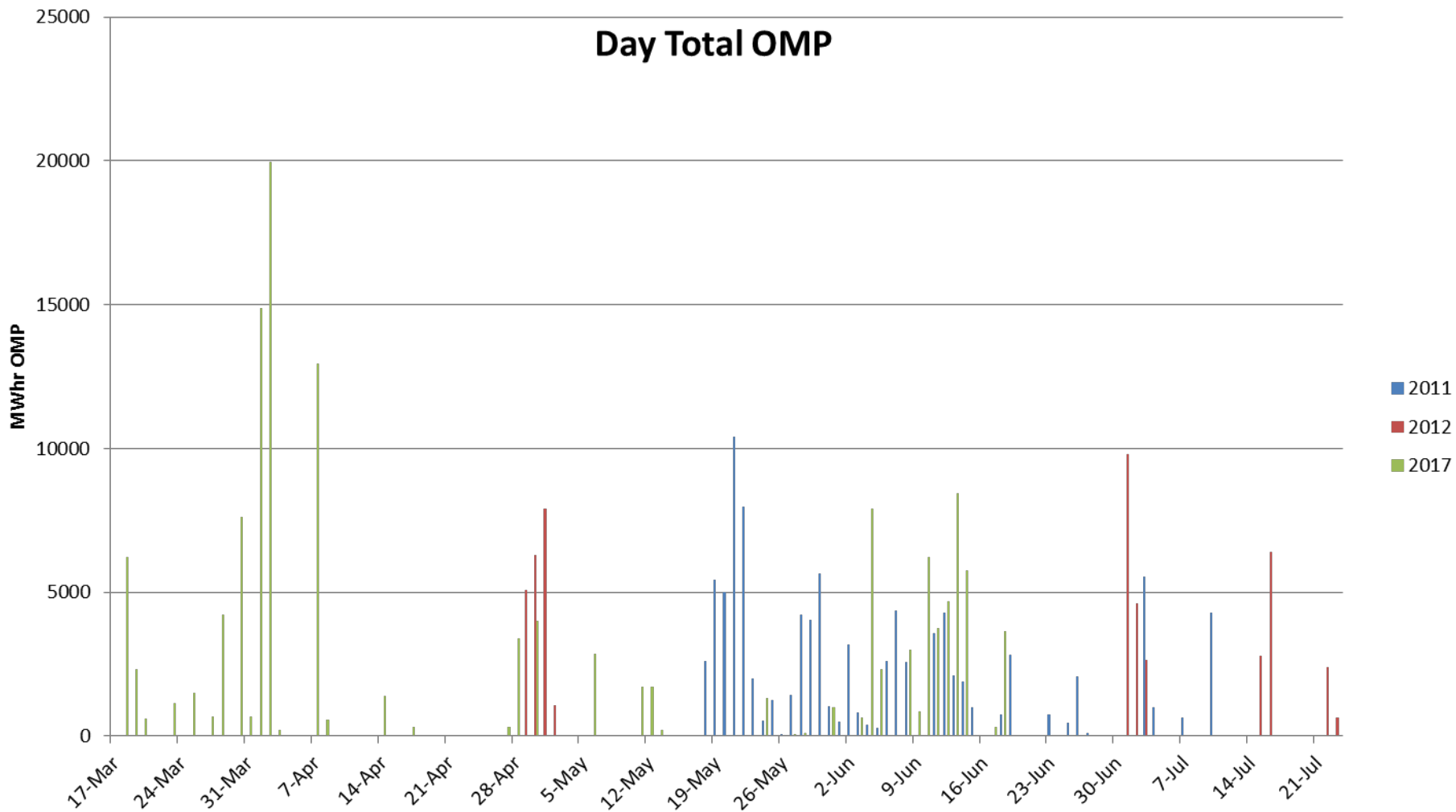


Year	Jan - July (MAF)	Line color
2011	142.6	Purple dash
2012	129.4	Blue dash
2017	137.1	Red

Bonneville Power Administration, PGPW

Summary of OMP in 2017

- OMP called on 39 times from 3/17/17 through 6/18/17.
- This year OMP started before the gas waivers for water quality started on 4/1, which limited the amount of water that could be spilled.
- 13 days had significant requests for displacement during HE7 – HE22. Previous years had minimal to no displacement during these hours.
- 2017 had a period of 48 hours straight of requesting OMP displacement.
- The runoff shape was early (Slide 3), which resulted in nearly 80 GW-hrs of OMP through April 25th(Slide 7).
- The amount of OMP requested was 139,638 MW-hrs.
- The displacement costs of OMP was around \$2.2 million.
- The Oversupply Management Protocol business practice was updated on April 28, 2017 to include mandatory waivers during OMP events which resulted in approximately 63 GW-hrs of less wind displacement and reduced OMP costs by around \$1 M.



- The 2017 OMP season started and ended earlier than previous years.
- The early 2017 displacement was very large.

*2017 amounts are requested amounts. 2011 and 2012 are billed amounts.