

Characteristics of the 4 Lower Snake River Dams

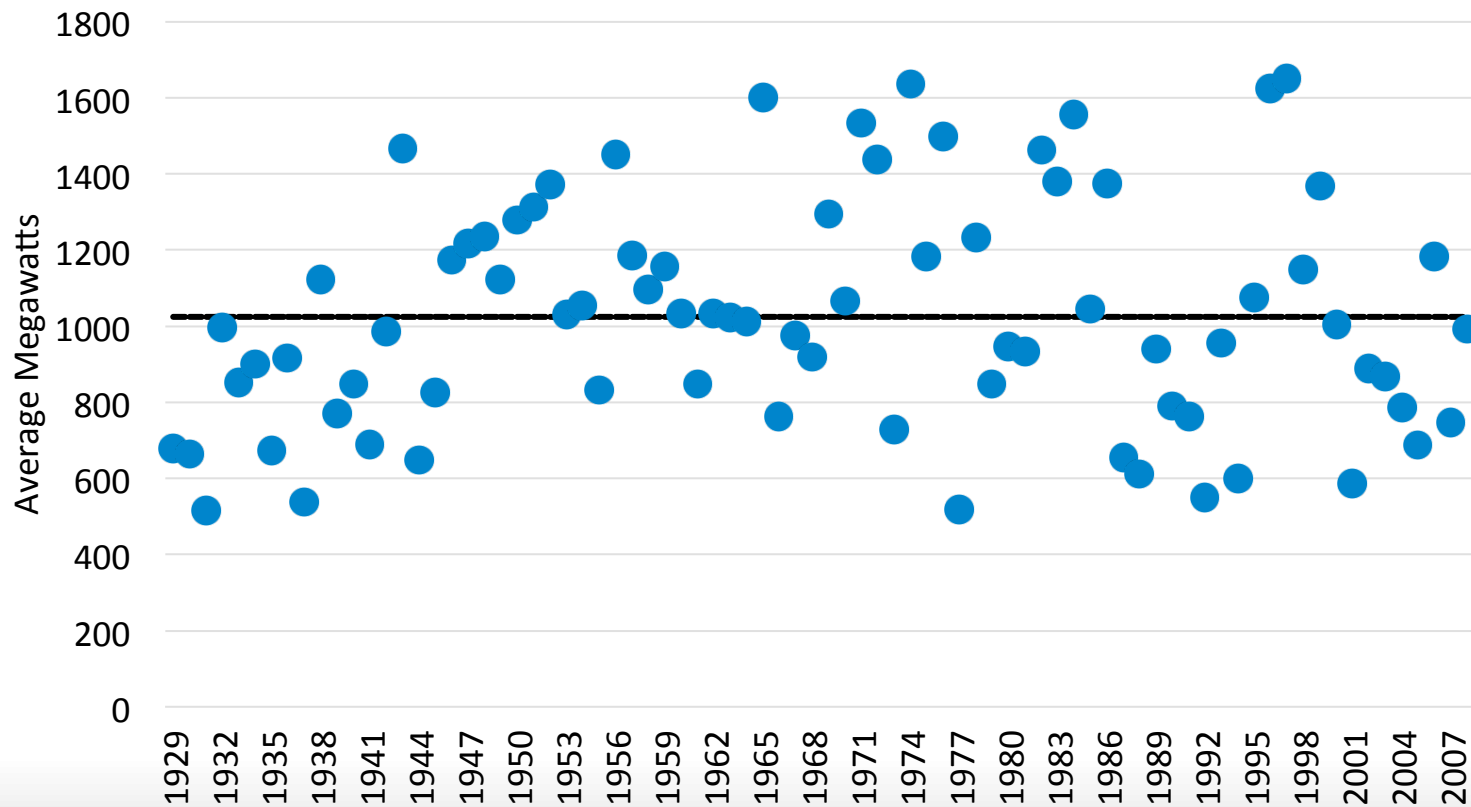
Clean and Affordable Energy Conference

NW Energy Coalition
and
Oregon Solar Energy Industries Association

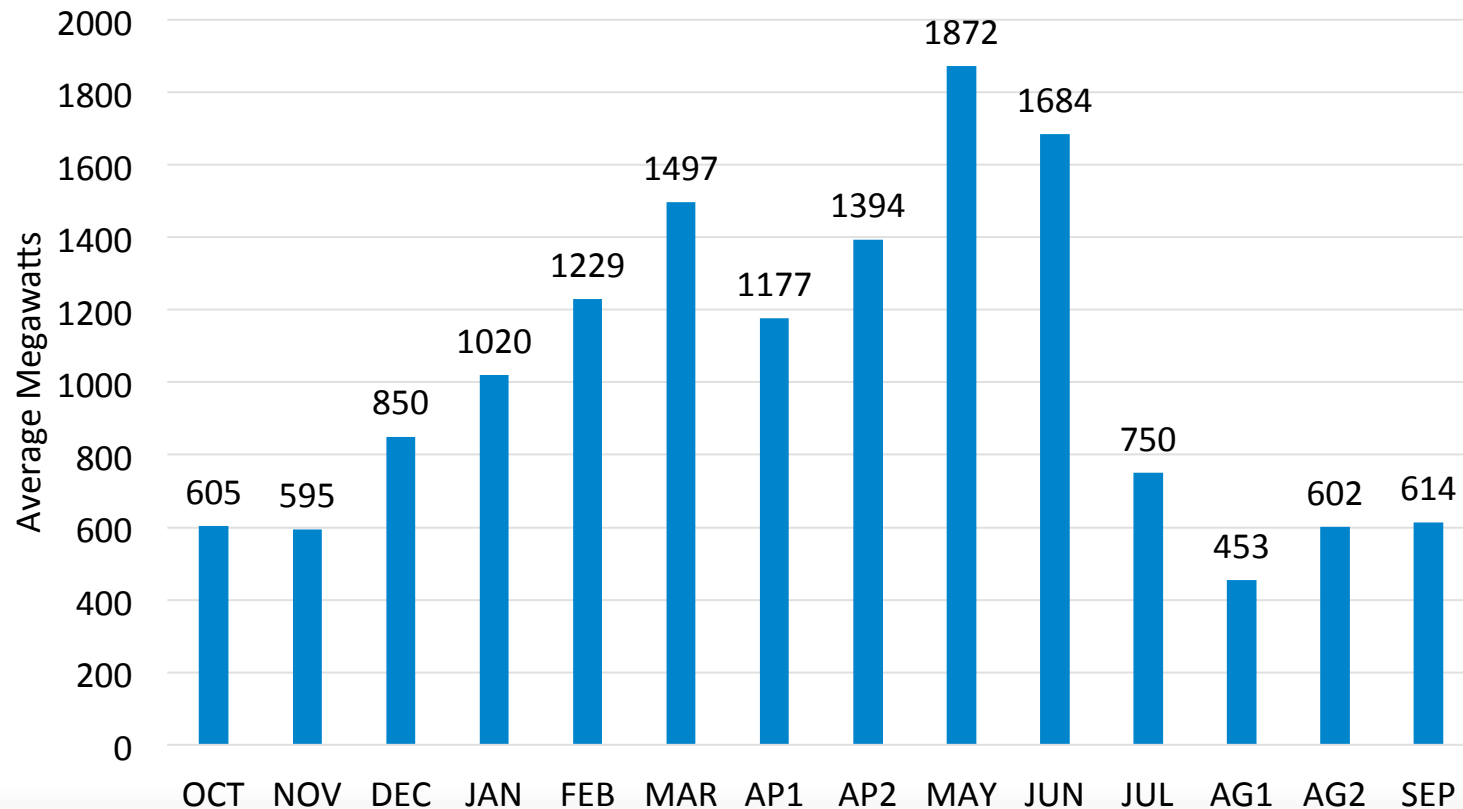
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November 17, 2016
Portland, Oregon

Simulated Annual Average Generation at all 4 Dams

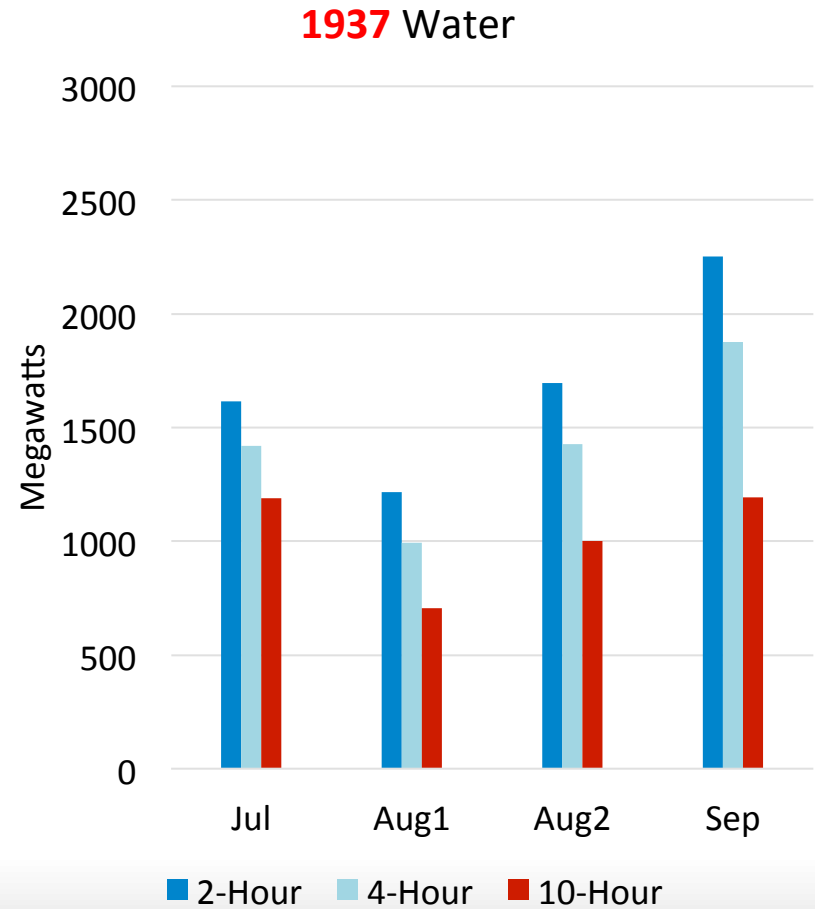
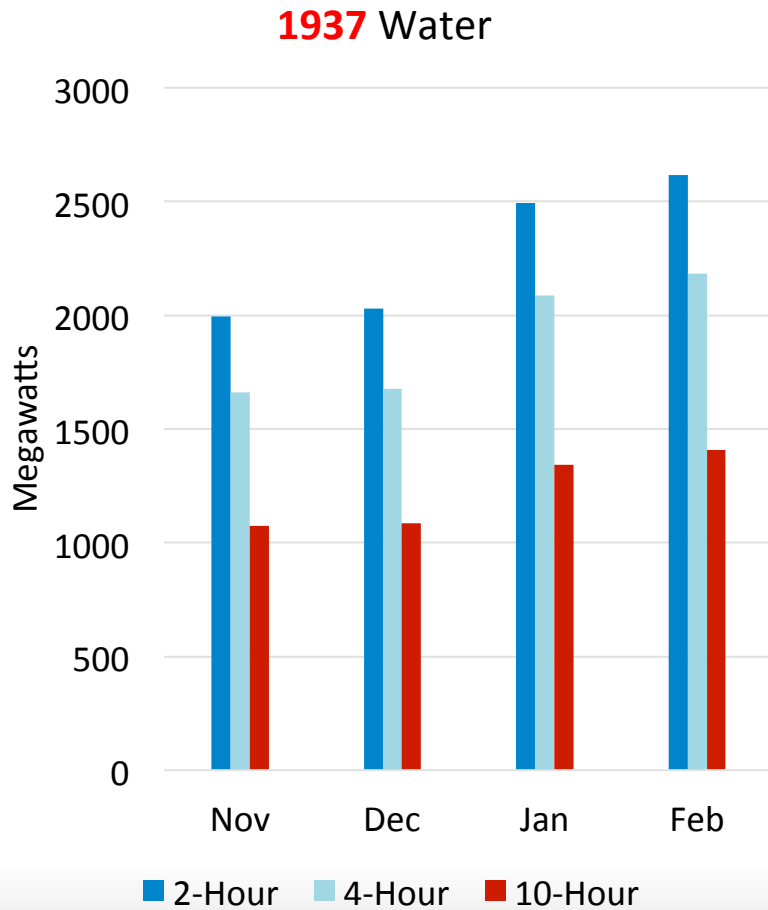
Max Capacity 3,489 MW – Overall Average Energy 1,024 aMW



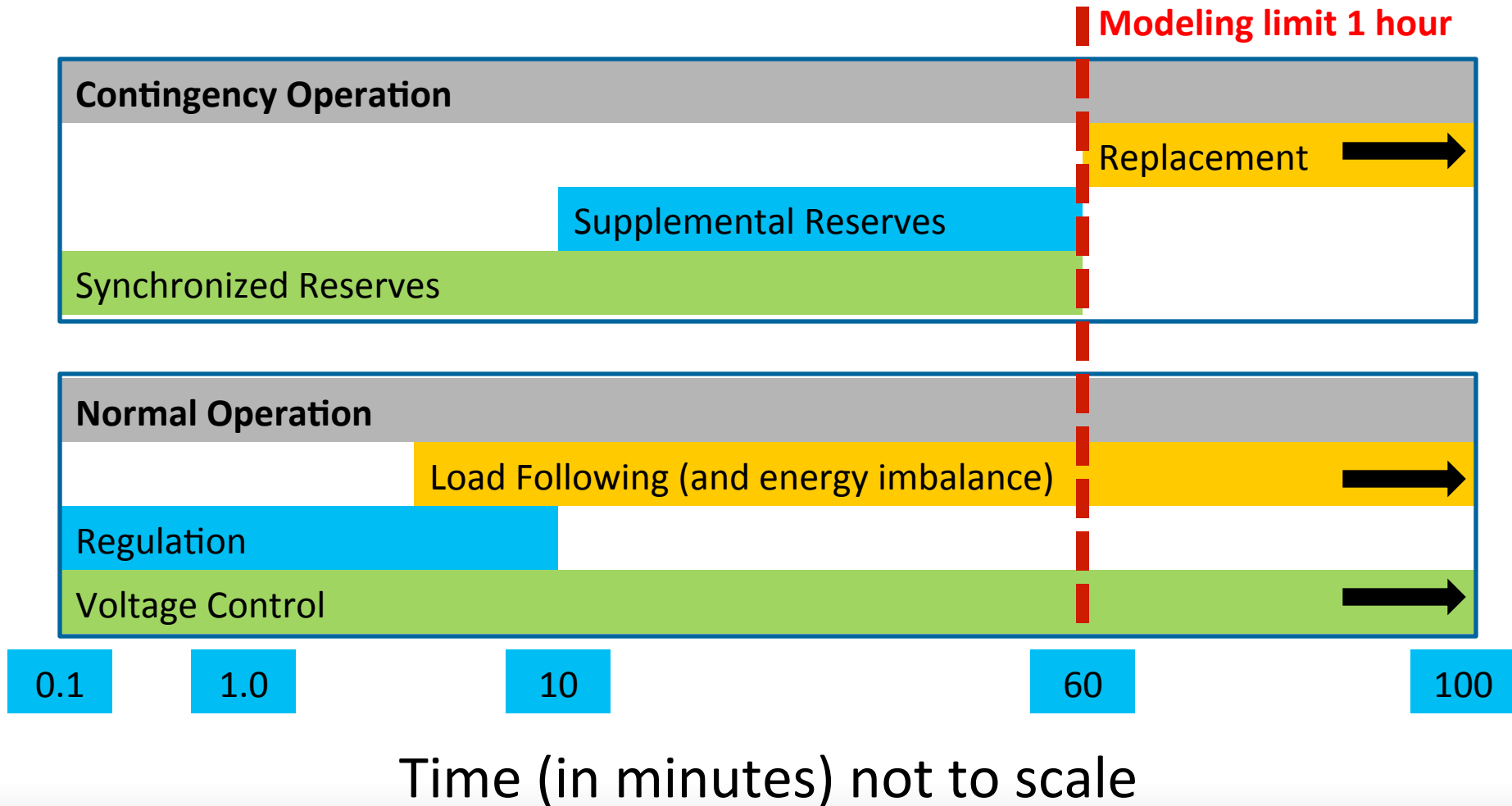
Simulated Monthly Average Generation at all 4 Snake River Dams (averaged over 80 hydro years)



Sustained Peaking Capacity (TRAP model output)



Ancillary Services Timing



Ancillary Services Provided by the 4 lower Snake Dams

- Part of Automatic Generation Control (AGC)
- Can provide spinning reserves

----- Modeling Assumptions -----

- Provide load following for periods > 1 hour
- Do not provide balancing reserves (INC/DEC)
- Do not explicitly provide contingency reserves