Proposed WY 2011 Hydrograph: Impacts on CRSP Electric Power Resources

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Annual water release distribution

- USBR sets monthly water release targets
  - Factors: hydrological conditions, changing forecasts, Federal electrical power obligations
- Western sets hourly schedules for electrical production
  - Markets power to provide greatest value to customers
  - Obligates more energy and capacity in peak use months (Dec, Jan, Feb, Jul, Aug)

Proposed 2011 Hydrograph

Sets proposed operating parameters on GCD power operations:

- 16,000 cfs when annual release volume is < 9 maf
- 22,000 cfs when annual release volume is > 9 maf

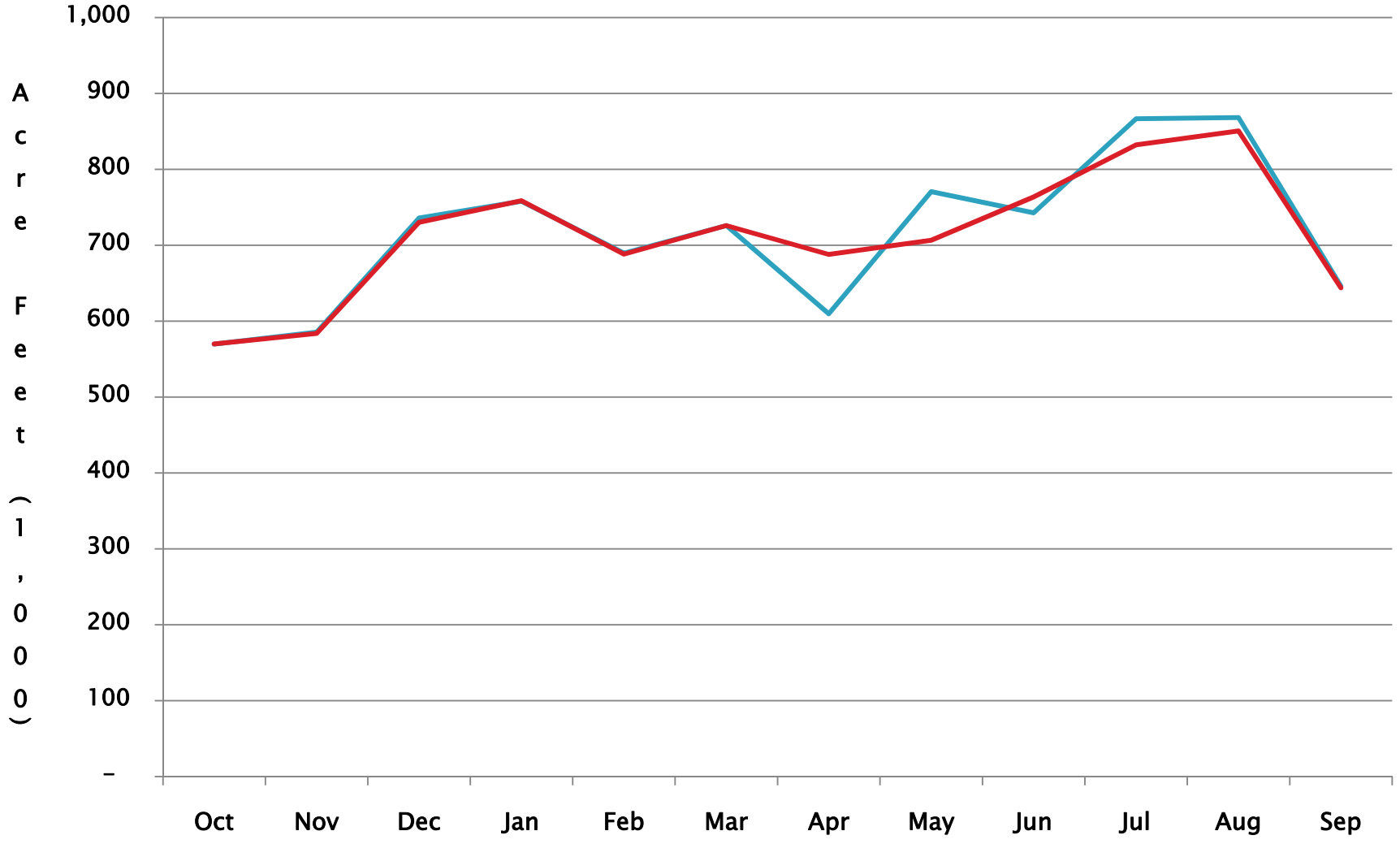
Reserves and regulation

- Normal operation under proposed 2011 hydrograph
- Non-discretionary obligations
  - Reserves and regulation both held at GC
- Reserve generation (80 MW, 2.25 kcf)
  - 2 hours or less; response to system event/emergency
  - Spinning and non-spinning
  - To reduce reserve requirements, member of two reserve "pools"
- System regulation (40 MW, +/- 1.1 kcf)
  - Momentary fluctuations to maintain system stability
  - Support for two Western control areas

Impact analysis approach

- Modeled WY 2008, 2009, 2010
- Annual volumes (maf): 8.978 , 8.23 and 8.23 respectively
- Methodology:
  - Actual monthly volumes compared to proposed hydrograph targeted monthly volumes
- GT Max model uses monthly volumes and creates hourly release patterns to optimize power production within constraints
- Modeled both historical planned and scenario-proposed volumes to achieve "apples – apples" comparison
- Historical prices used for this analysis

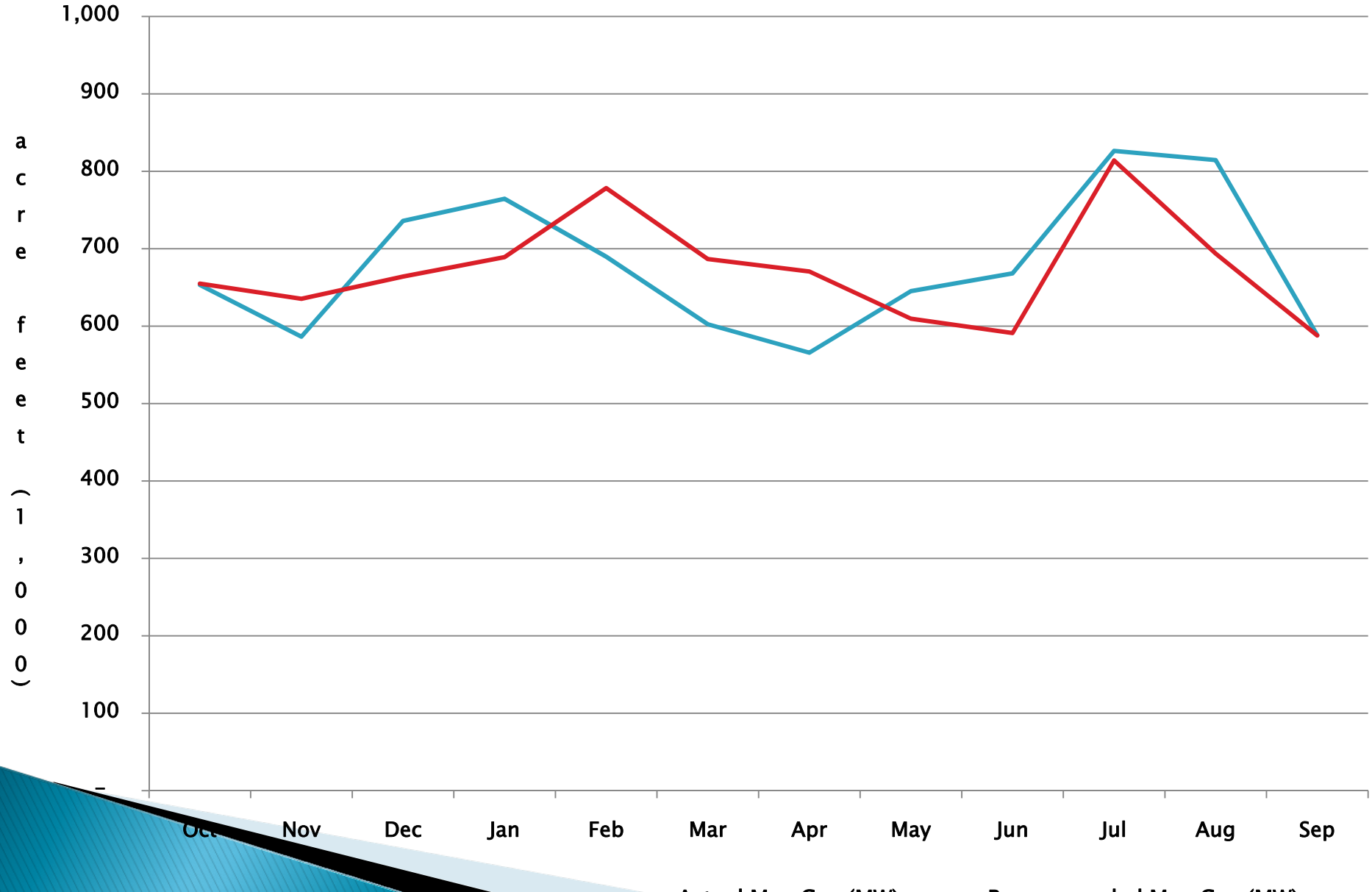
Water Year 2008
Modeled hydrographs



Impact Analysis – 2008
Capacity differences by month

Oct	0
Nov	-2
Dec	-6
Jan	1
Feb	-1
Mar	0
Apr	78
May	-64
Jun	21
Jul	-34
Aug	-18
Sep	-2

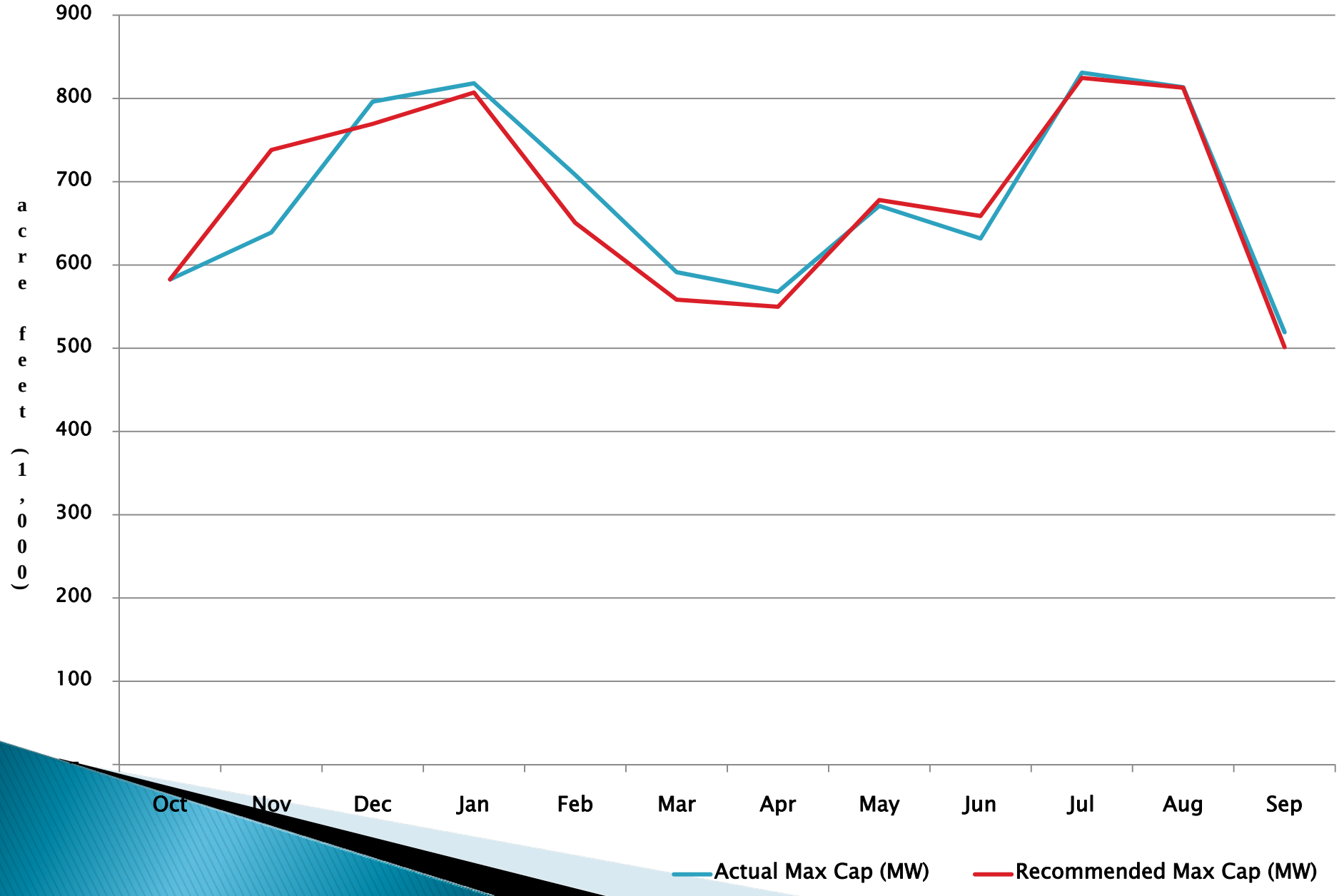
Water Year 2009
Modeled hydrographs



Impact Analysis – 2009
Capacity differences by month

Month	Capacity difference
Oct	2
Nov	49
Dec	-72
Jan	-75
Feb	89
Mar	84
Apr	105
May	-36
Jun	-77
Jul	-12
Aug	-121
Sep	-1

Water Year 2010
Modeled hydrographs



Impact Analysis – 2010
Capacity differences by month

Month	Capacity Difference
Oct	0
Nov	99
Dec	-27
Jan	-11
Feb	-57
Mar	-33
Apr	-18
May	7
Jun	27
Jul	-6
Aug	-1
Sep	-18

Impact Analysis Conclusions

- WY 2008 comparison:
  - net reduction in cost to Western estimated at $352,000
- WY 2009 comparison:
  - Net cost to Western estimated at $258,000
- WY 2010 comparison:
  - net cost to Western estimated at $535,000