

WESTERN AREA POWER ADMINISTRATION

High Flow Experiments: Financial and Operational Effects on CRSP and the Electric Power System

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What is Western?



- Created in 1977 to assume Reclamation's function of marketing and delivering power generated at Federal hydroelectric powerplants throughout the western United States
- Mission: Market and deliver clean, renewable, reliable, cost-based federal hydroelectric power and related services

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Reclamation and Western— who does what?

Reclamation:

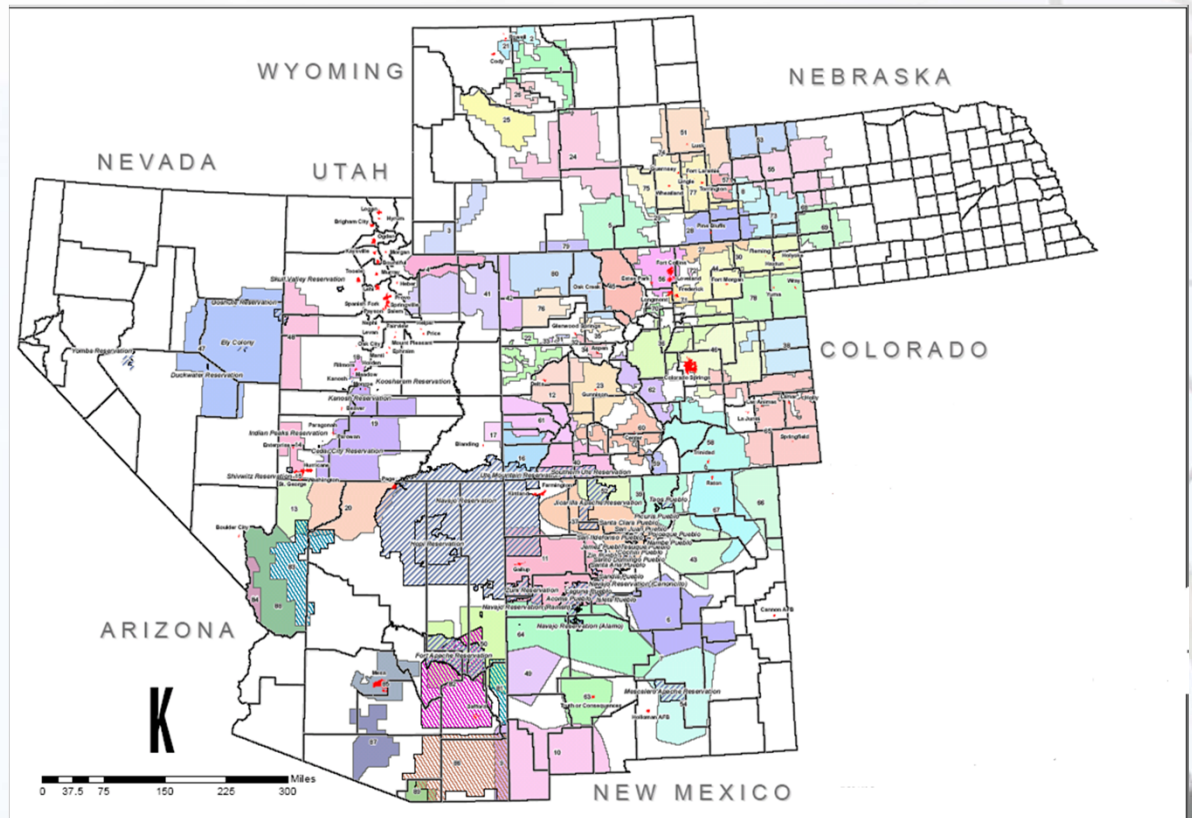
- Owns and operates power plants
- Responsible for water release activities including reservoir management, irrigation, flood control, water compact deliveries, environmental activities
- Generation is handed off to Western at the plant

Western:

- Owns and operates the transmission system infrastructure used to deliver power
- Schedules and delivers generation to electric service customers
- Dispatches generation for electrical regulation and emergencies
- Revenue from sale of generation is used to pay project debt to U.S. Government

Electric Power Customers

- Rural electric coops
- Municipal utility systems
- Native American tribes
- Federal facilities
- State institutions (such as universities)
- Irrigation districts



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How Do HFEs Affect Power?

1. Water bypasses the power plant
2. Water is moved from other months within the water year to stay within annual release requirements
3. Change in water volume released through the powerplant
4. Electrical reserves must be moved to other CRSP facilities

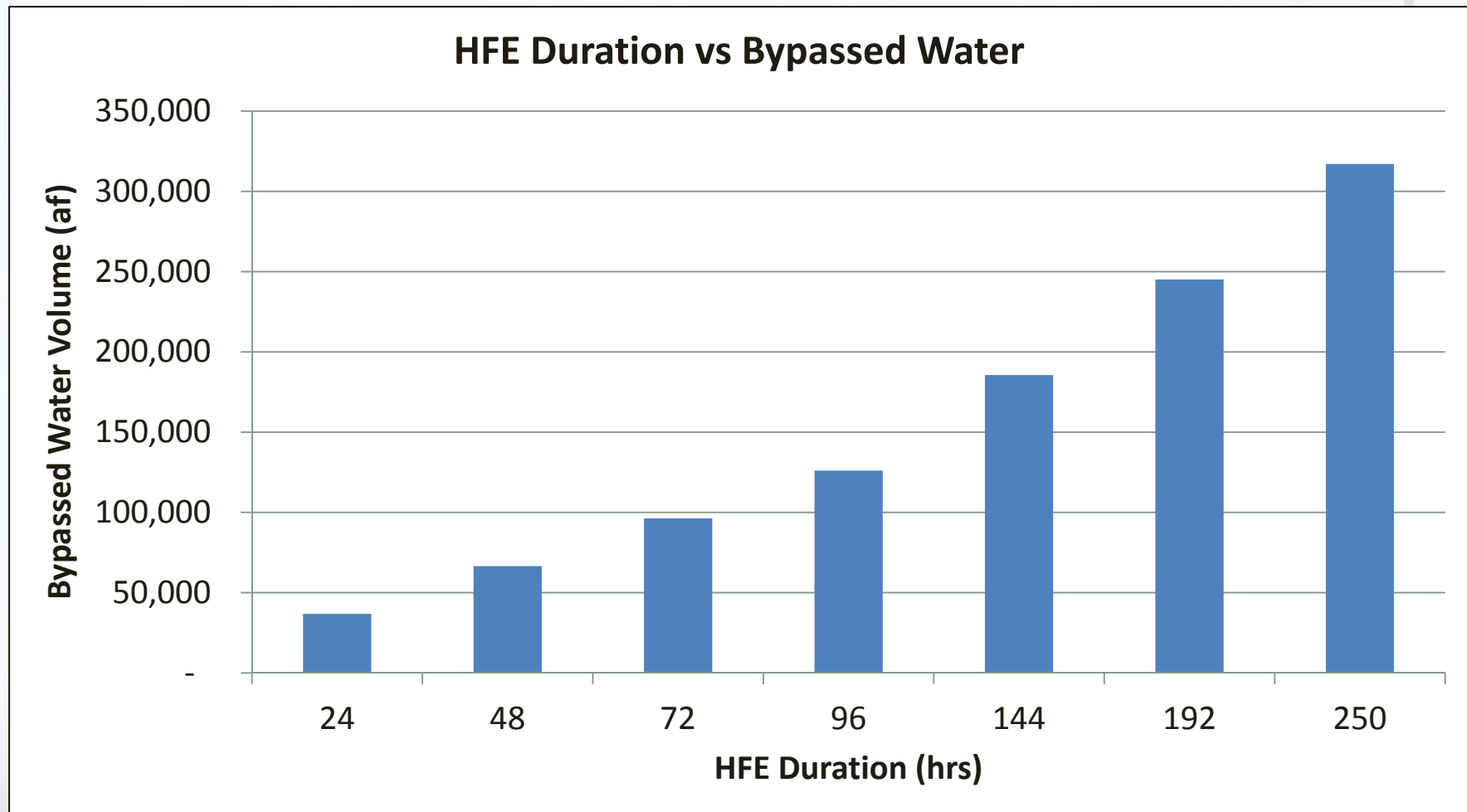
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Financial Impact of HFEs

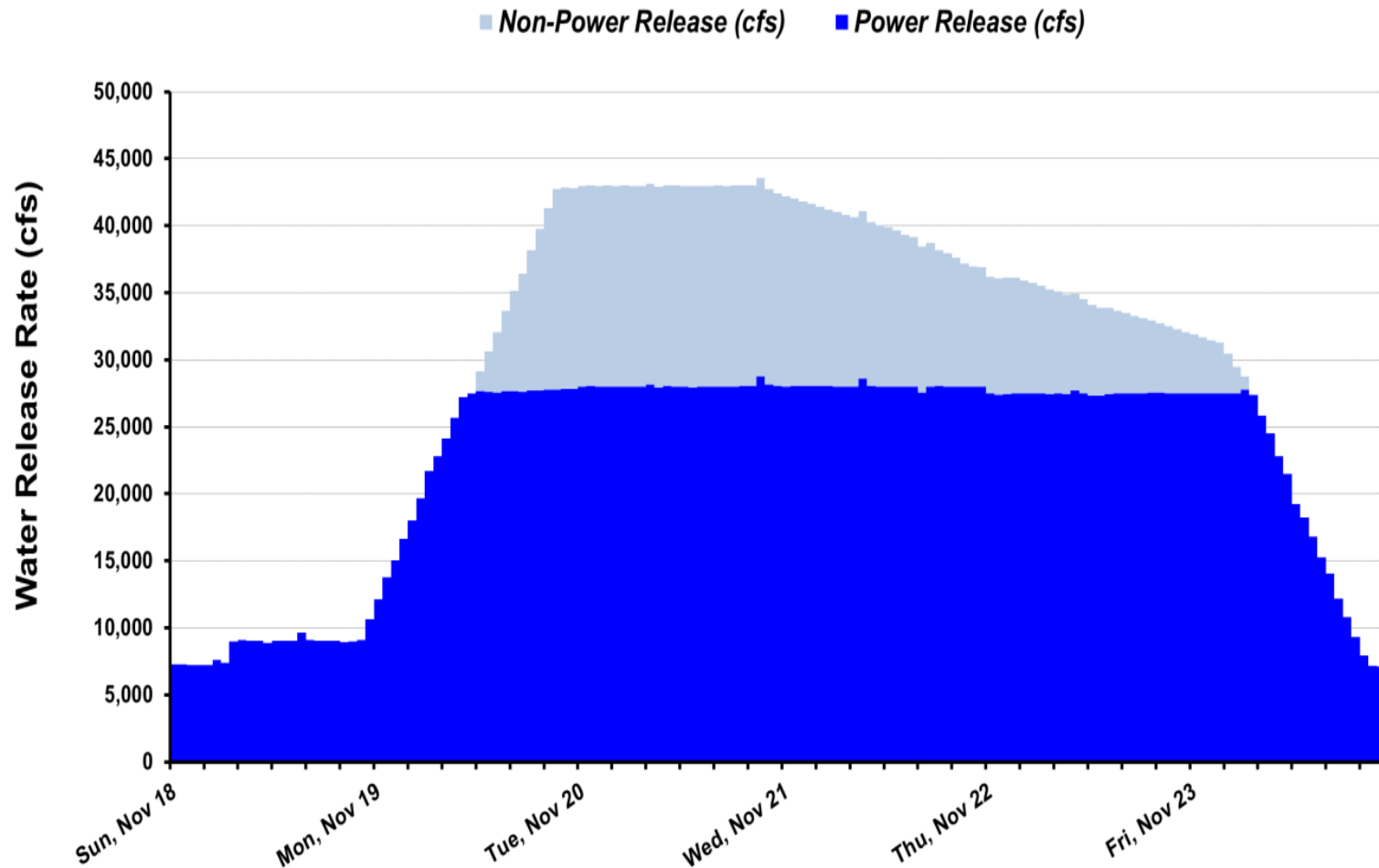
Hydropower Cost = \$ (Bypass Water) + \$
(Water Moved from Other Months) - \$
(Additional Power Generation during HFE)



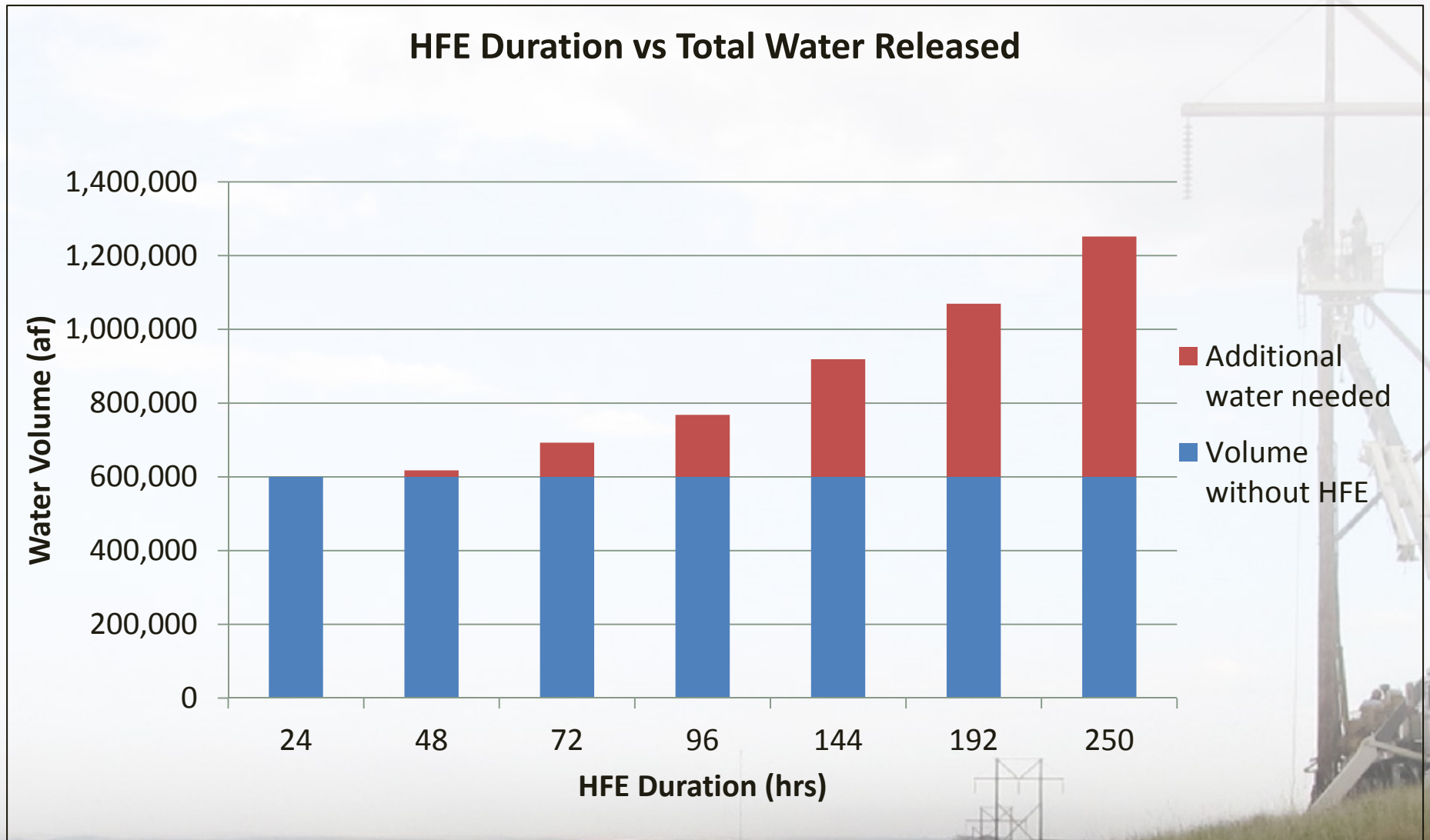
Hydropower Cost = \$ **(Bypass Water)** + \$ (Water Moved from other Months) - \$ (Power Generation during HFE)



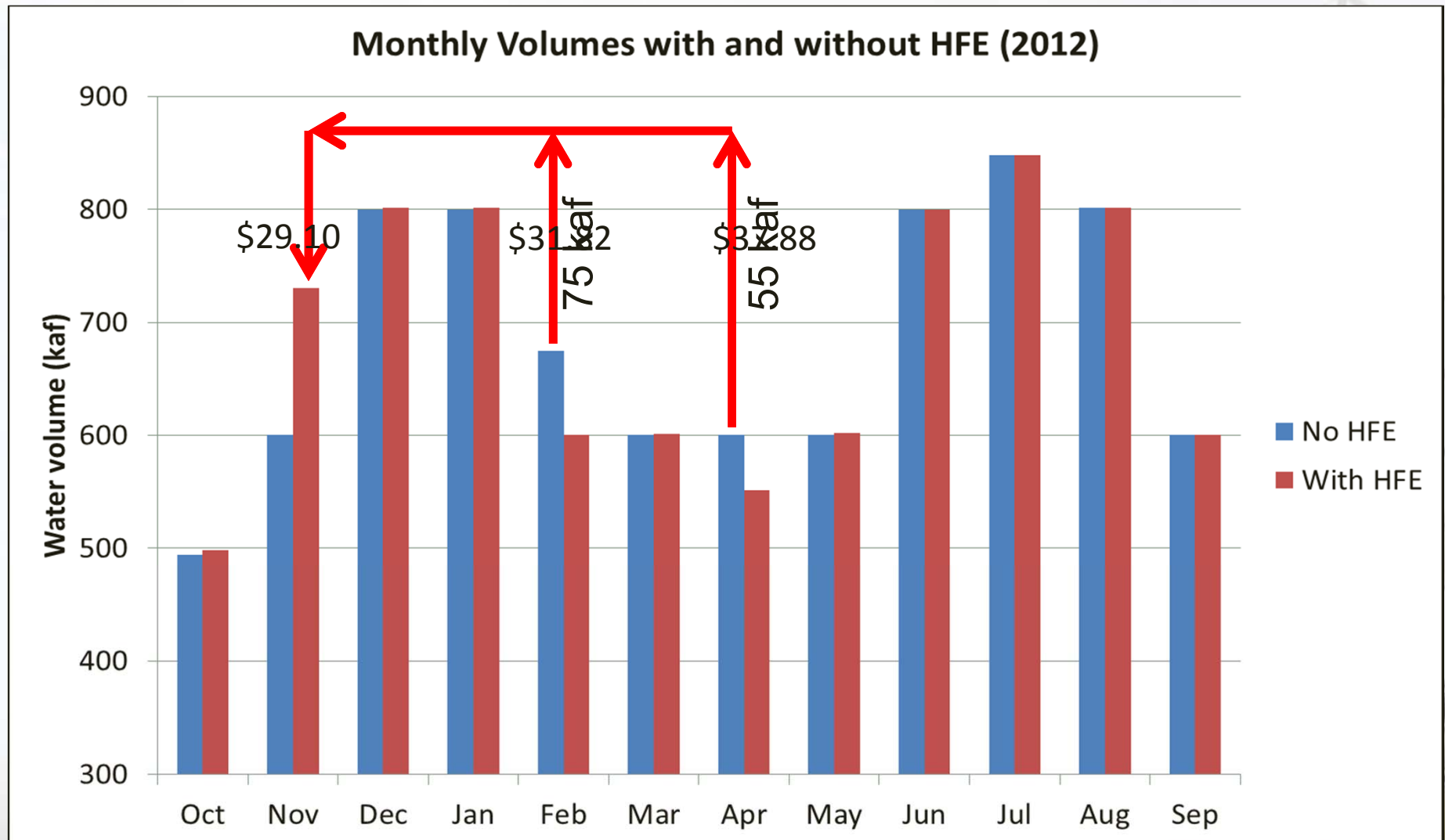
Bypassed Water during 2012 November HFE



Hydropower Cost = \$ (Bypass Water) + \$ (Water Moved from other Months) - \$ (Power Generation during HFE)

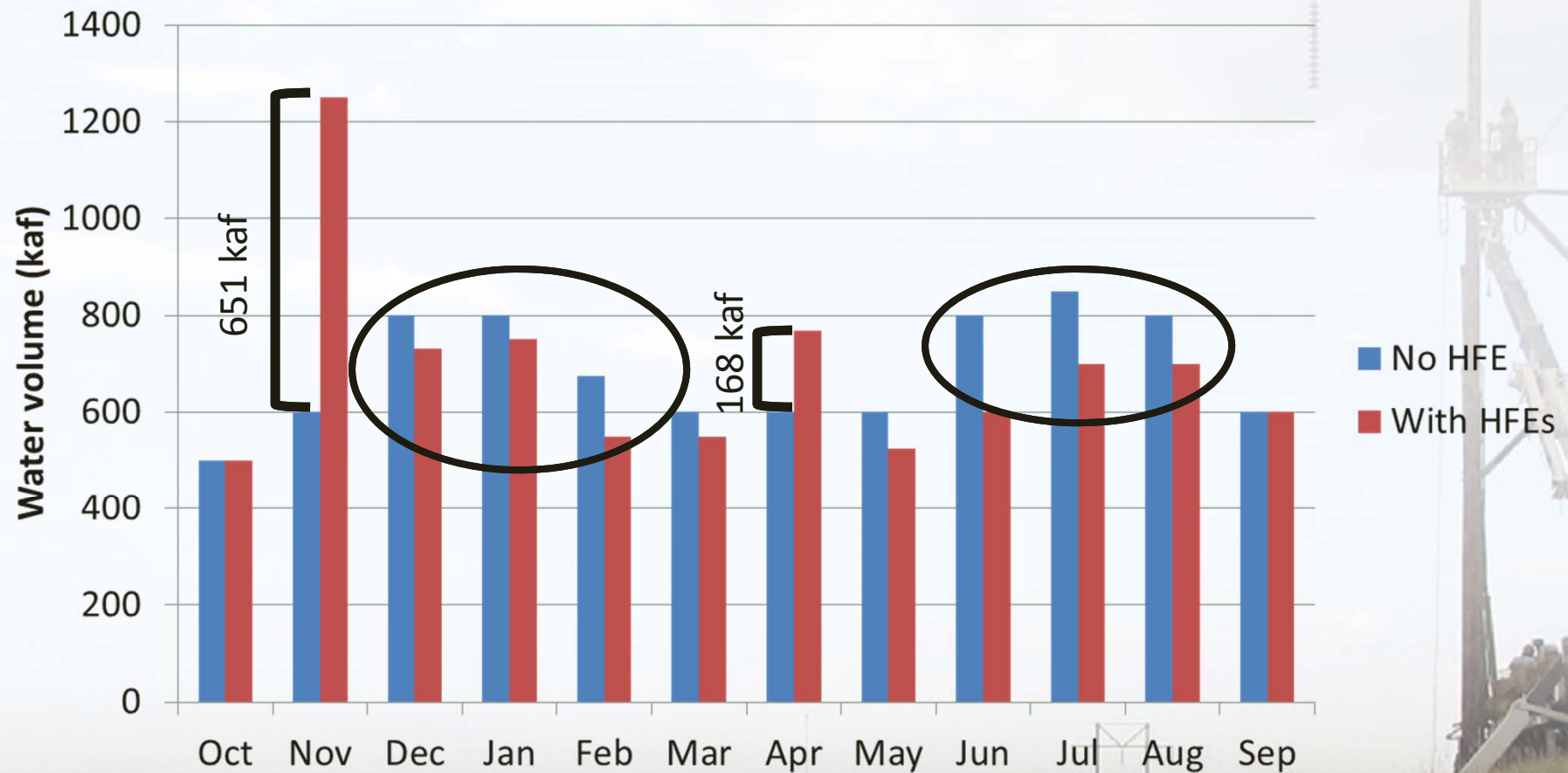


Hydropower Cost = \$ (Bypass Water) + \$ (Water Moved from other Months) - \$ (Power Generation during HFE)

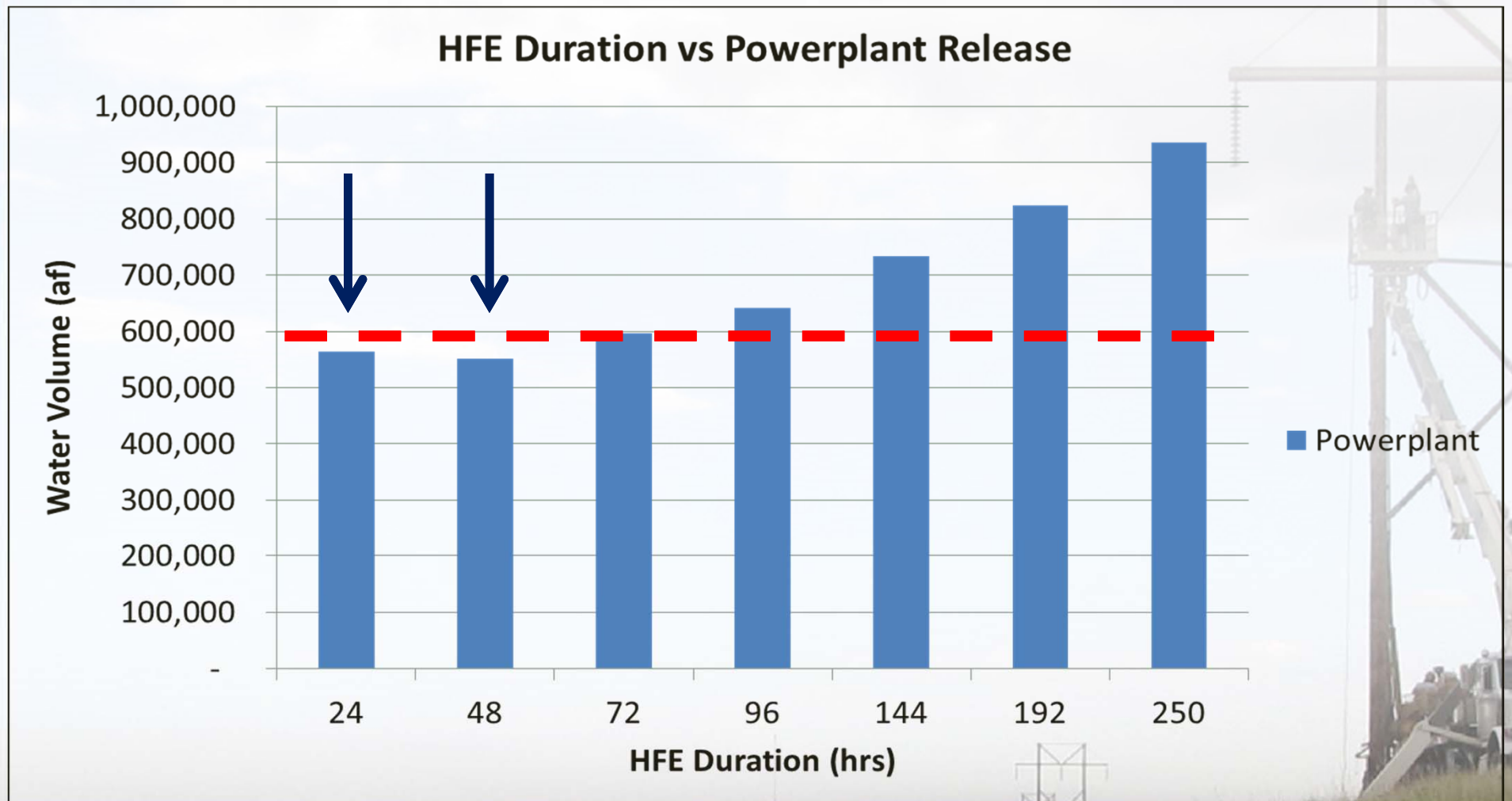


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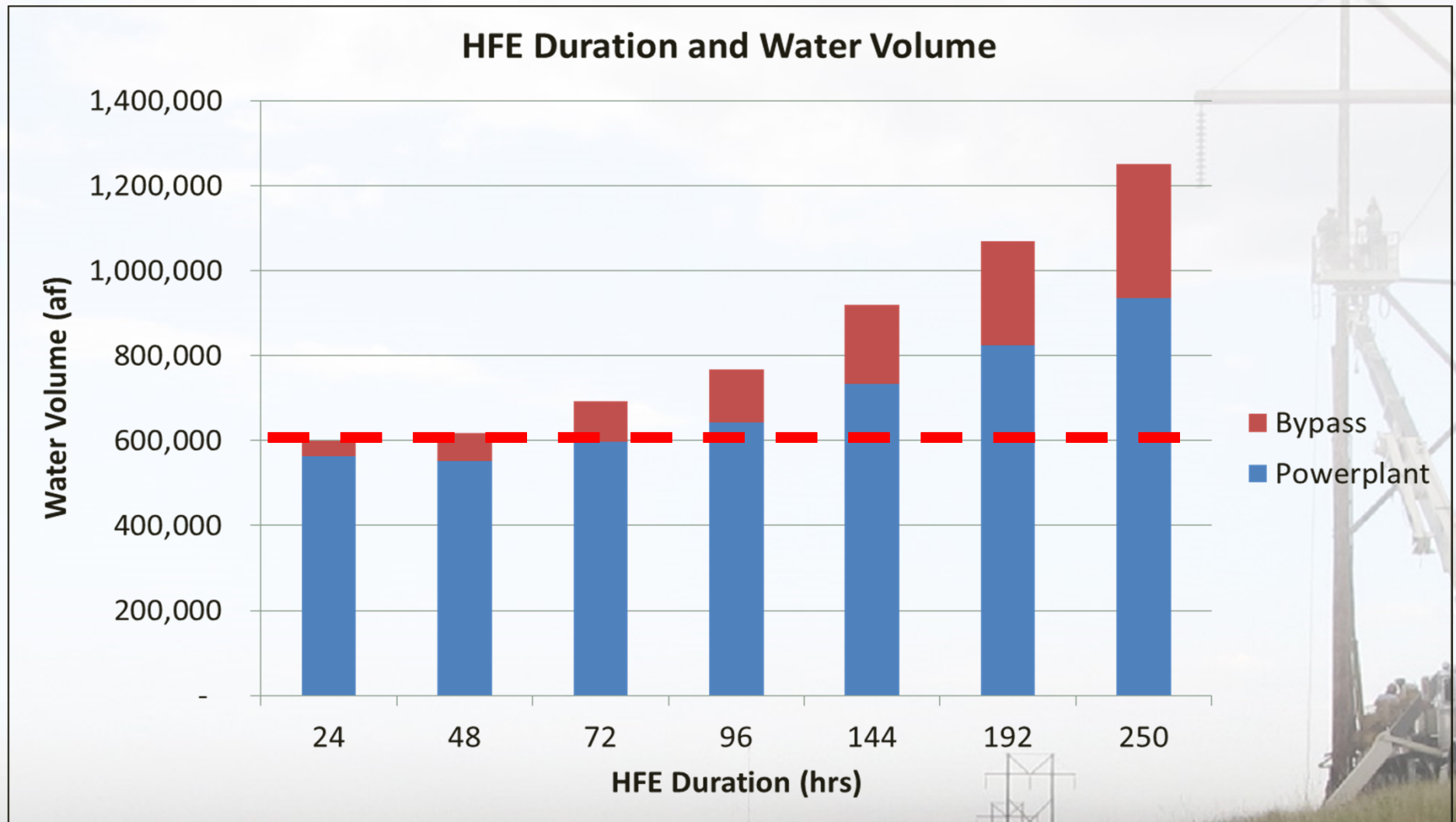
Monthly Volumes with Fall 250 hr and Spring 96 hr HFEs



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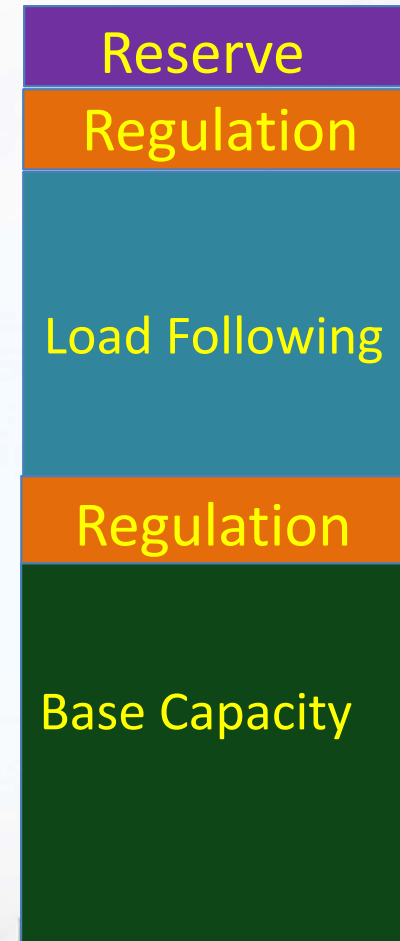
- Substantial effort is required to market additional power
- We typically have to sell power generated in excess of our customers' need for less



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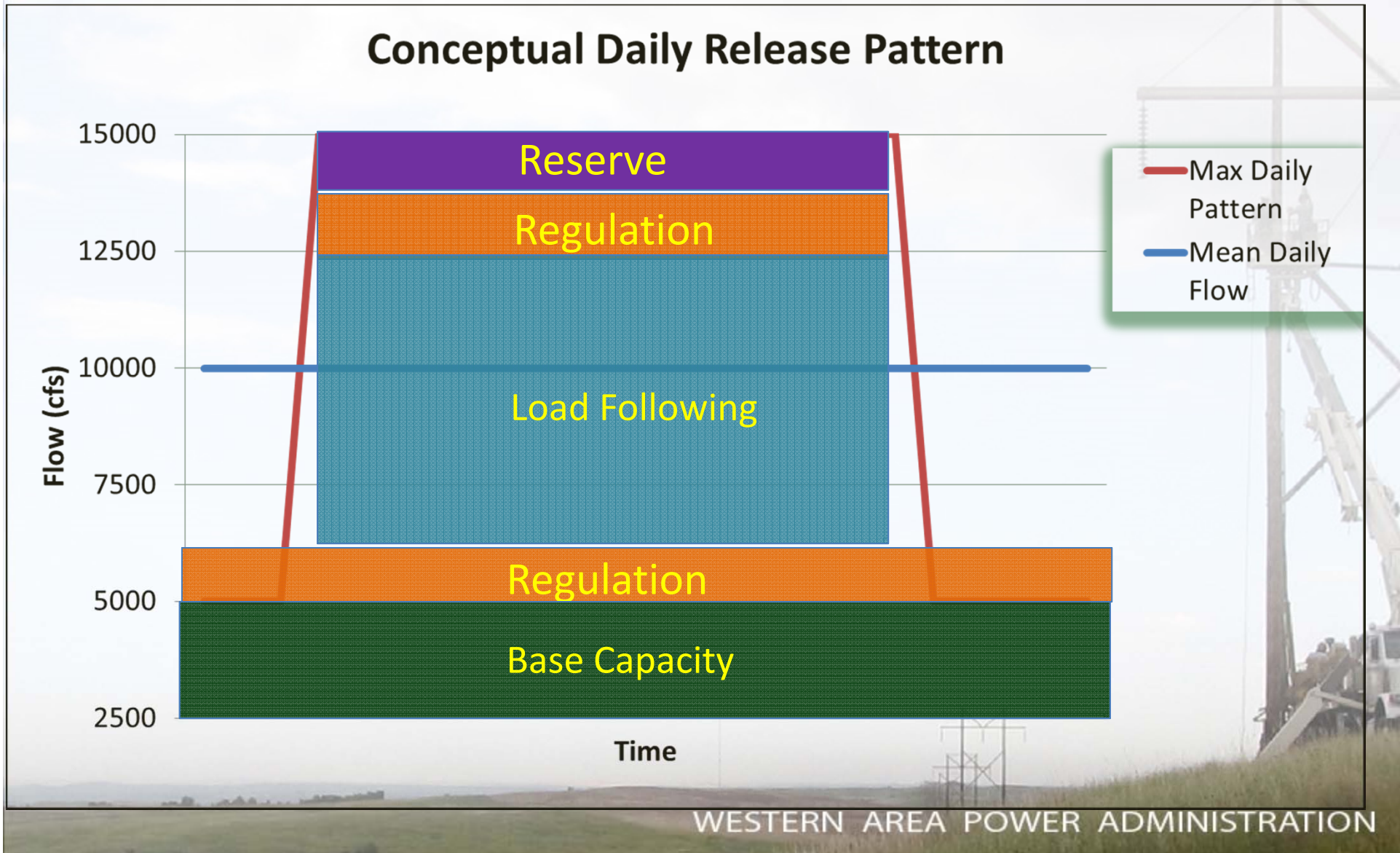
Electrical Reserves Moved to Other CRSP Facilities

Reserves: A required amount of capacity dedicated to respond to electrical emergencies and other power plant outages



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Electrical Reserves Moved to Other CRSP Facilities



Example: 2012 HFE

- Five day duration with a 1 day peak of 43,600 cfs
- 730 kaf released in November
- 78 kaf of water bypassed powerplant
- Water taken from February (≈ 75 kaf) and April (≈ 55 kaf)
- About 52 kaf additional water passed through generators in November
- Reserve capacity moved to Aspinall

Example: 2012 HFE

- Hydropower Cost =

CCCCC

- Total cost of about \$1.12 million

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Questions ?

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