

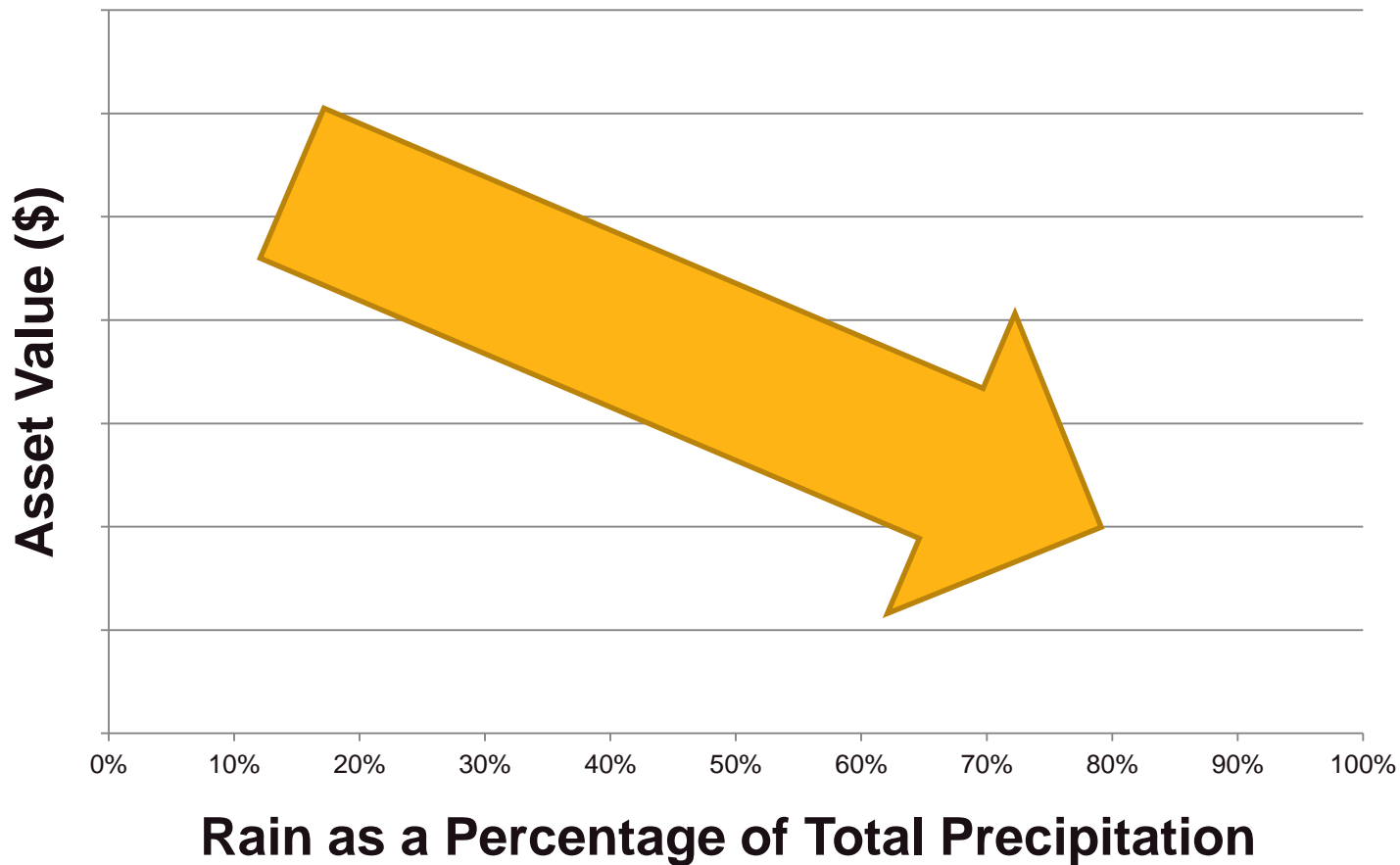
Exhibit to Agenda Item #3

Board Finance & Audit Committee Meeting and Special SMUD Board of Directors' Meeting

Tuesday, July 31, 2018, scheduled to begin at 5:30 p.m.

Customer Service Center, Rubicon Room

When precipitation falls as rain rather than snow, the asset's value declines.





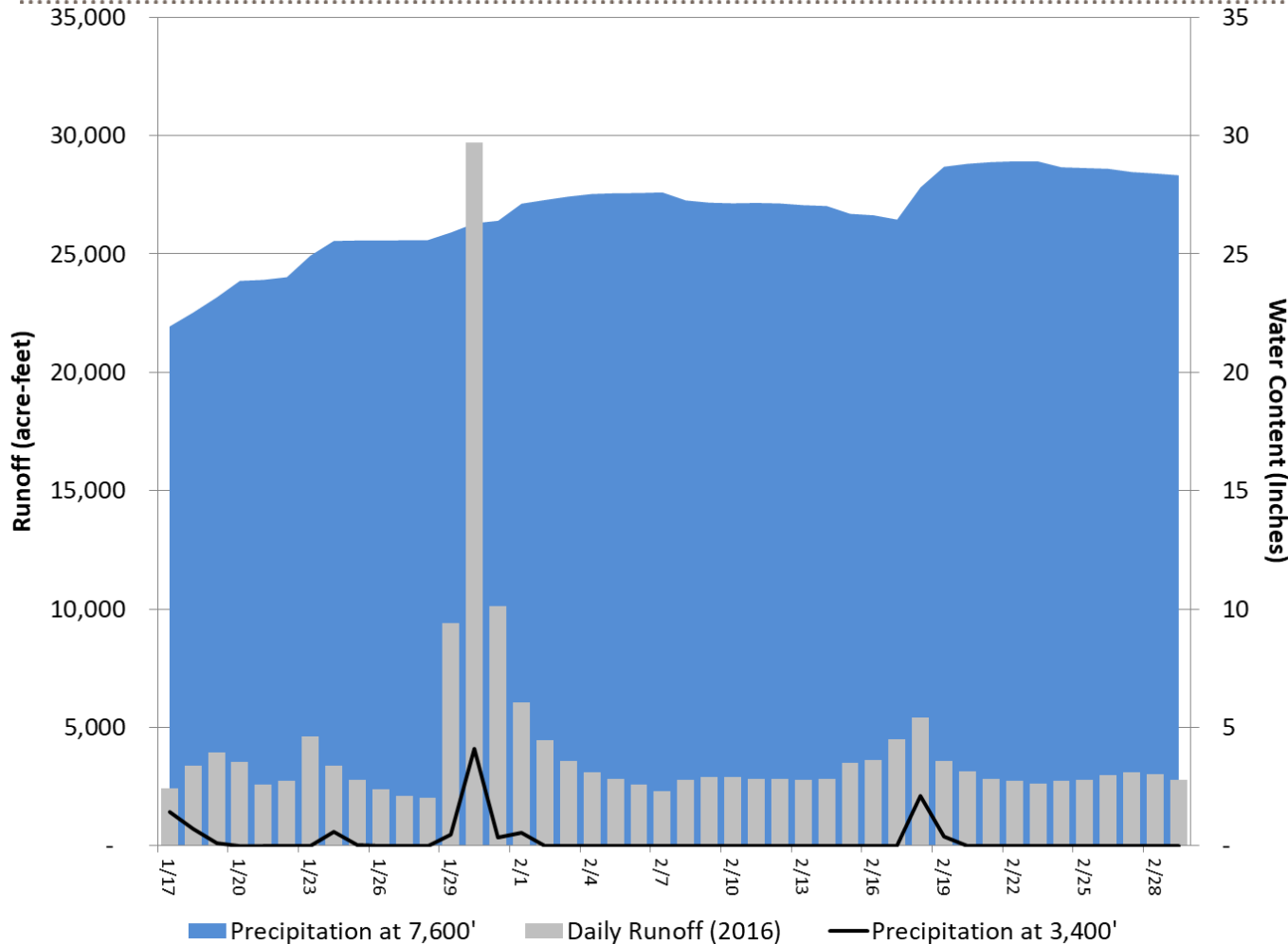
Why?

Rain = Less controlled generation

Snow = More controlled generation

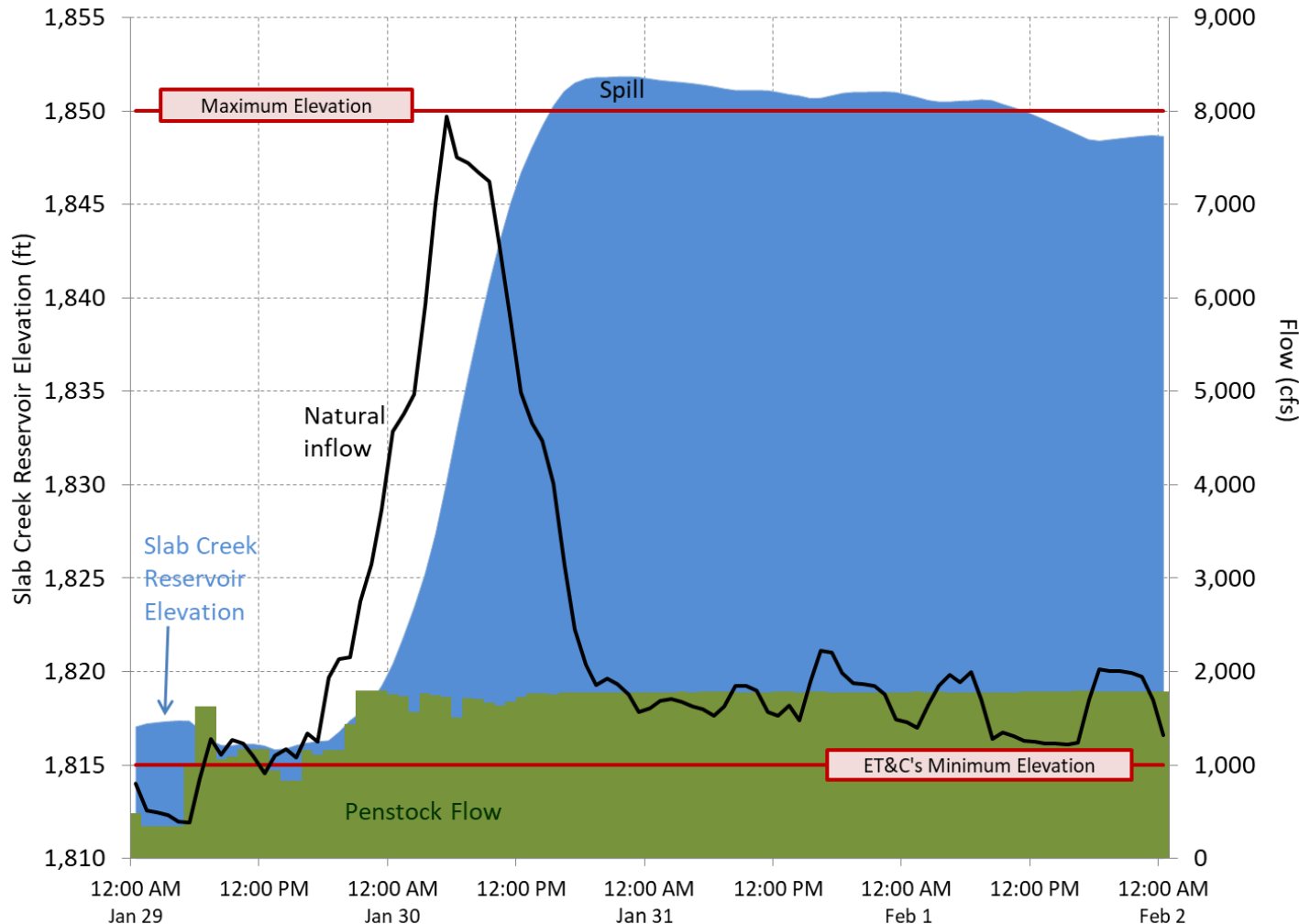


Runoff spikes are more correlated with precipitation that falls as rain.



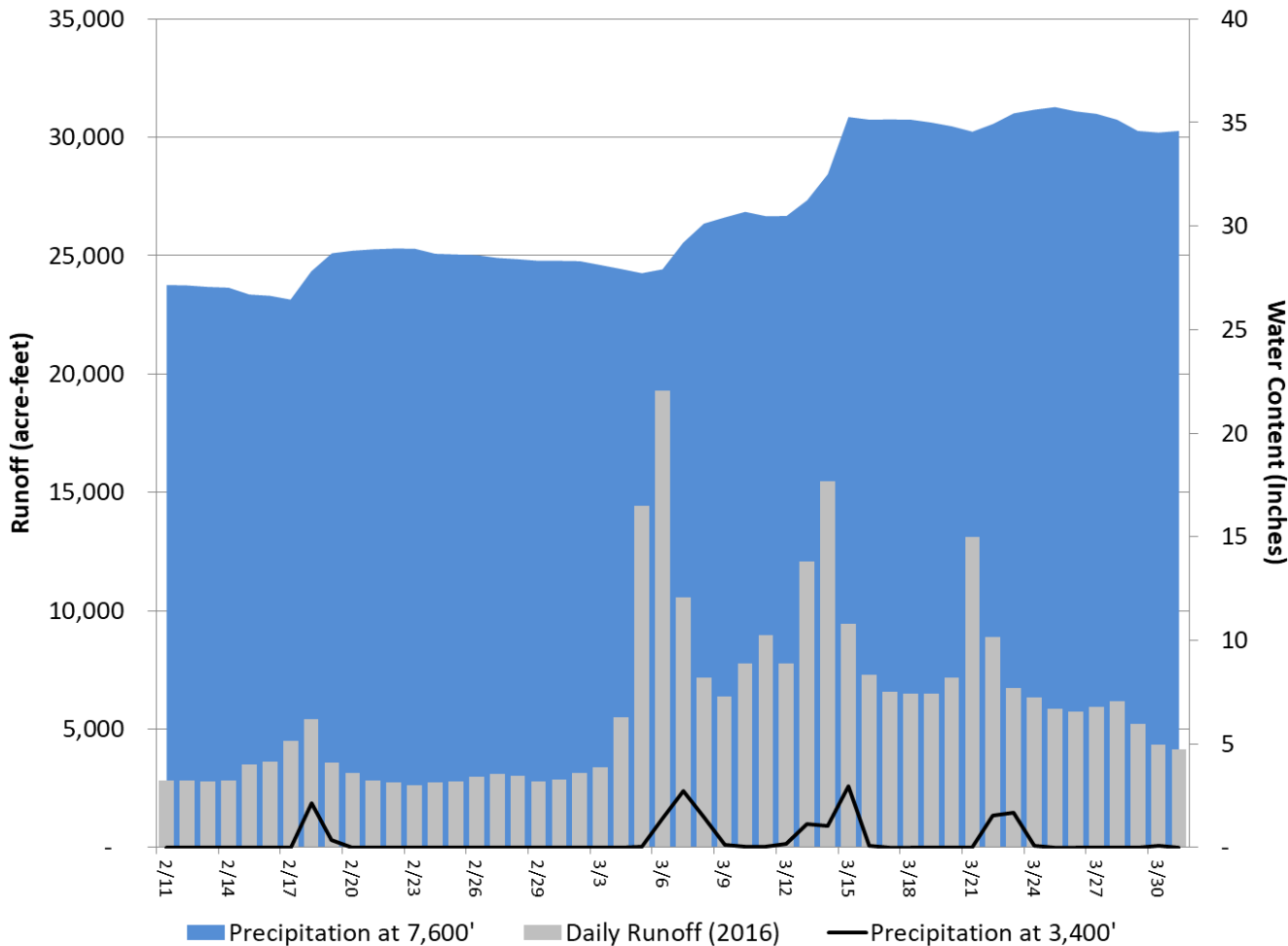
- On 1/30/2016, temperature at 7,600' ranged from a low of 22° to a high of 34° and more precipitation fell as rain than snow, creating extremely high runoff.
- On 2/18/2016, temperature at 7,600' ranged from a low of 21° to a high of 25°, snowpack increased and runoff only increased slightly.

When runoff comes quickly, spill is often unavoidable.



- Runoff peaked at 8,000 cfs
- Max turbine flow = 2,000 cfs
- To minimize spill when runoff spikes, reservoirs are drawn down, generation increases and SMUD becomes a price taker, accepting any price for the energy.

The timing of the runoff impacts the value of the asset.

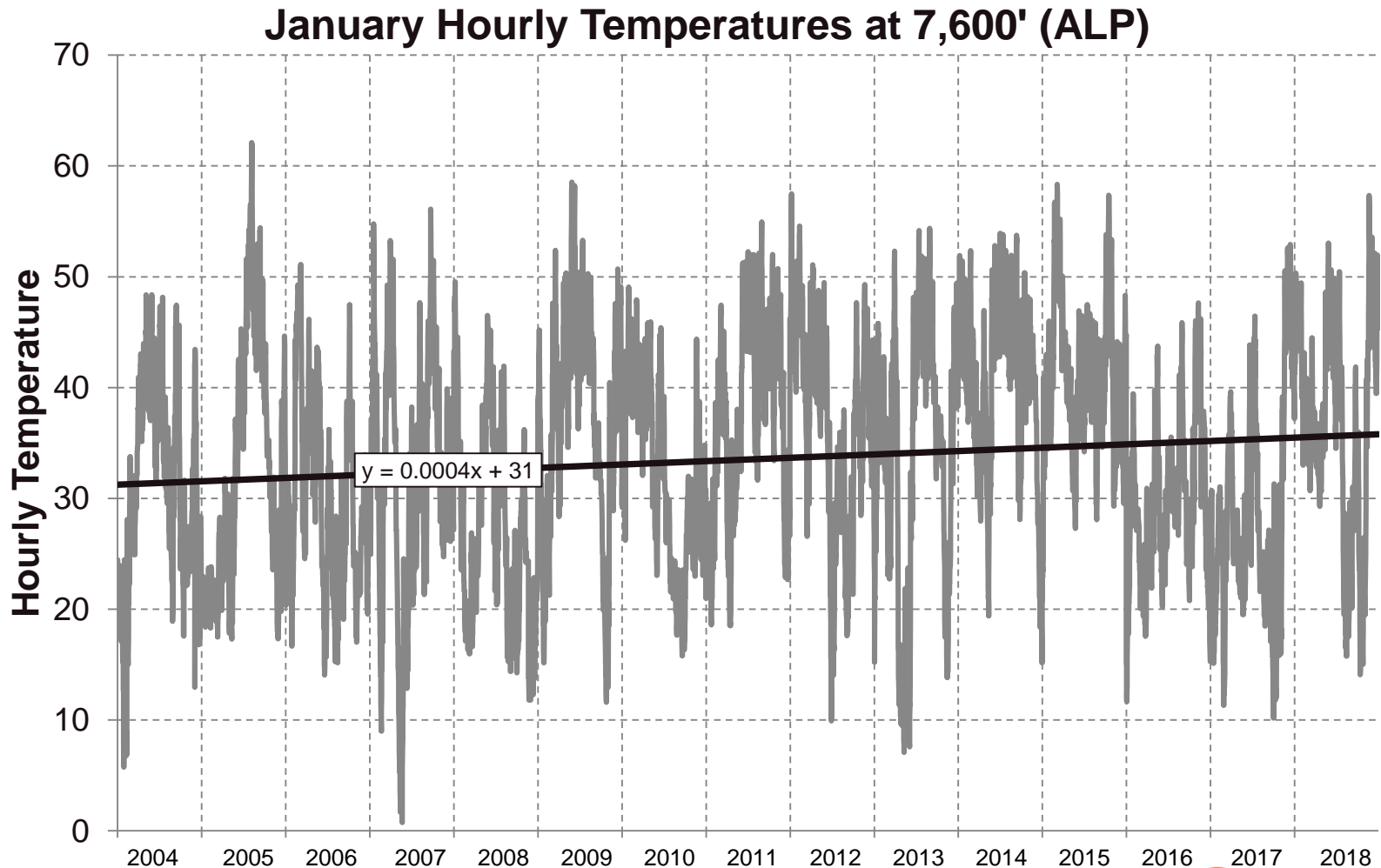


- Runoff in 2016 peaked in the month of March, 2 months earlier than normal.
- March generation was the 2nd highest monthly generation in 2016.
- March prices were the lowest monthly prices in 2016.
- The financial loss from generating in March rather than holding the water for later, was about \$1.5 million.

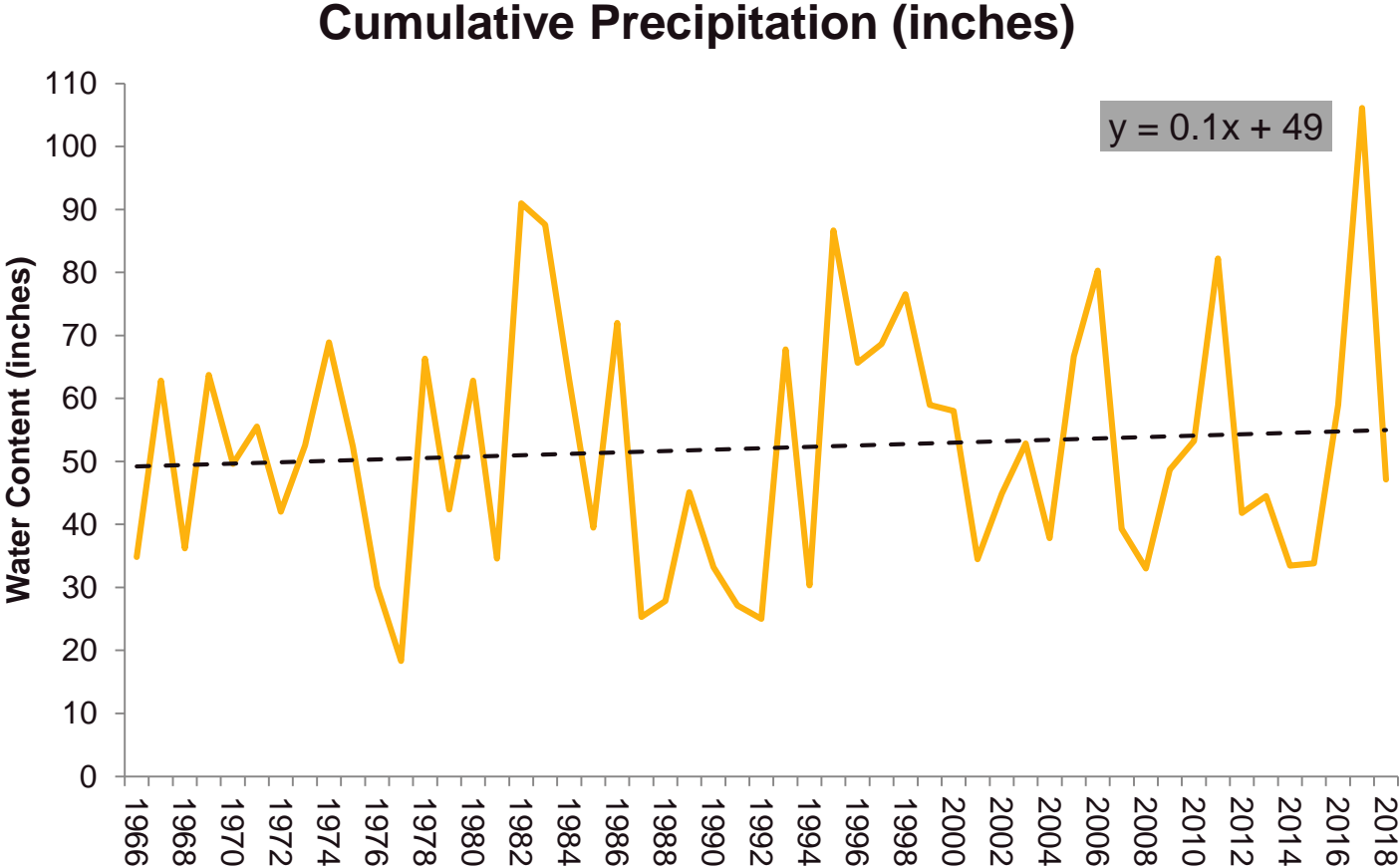
Question:

What is the weather trend?

From 2004 to 2018, temperature has increased 0.0004 degrees/year

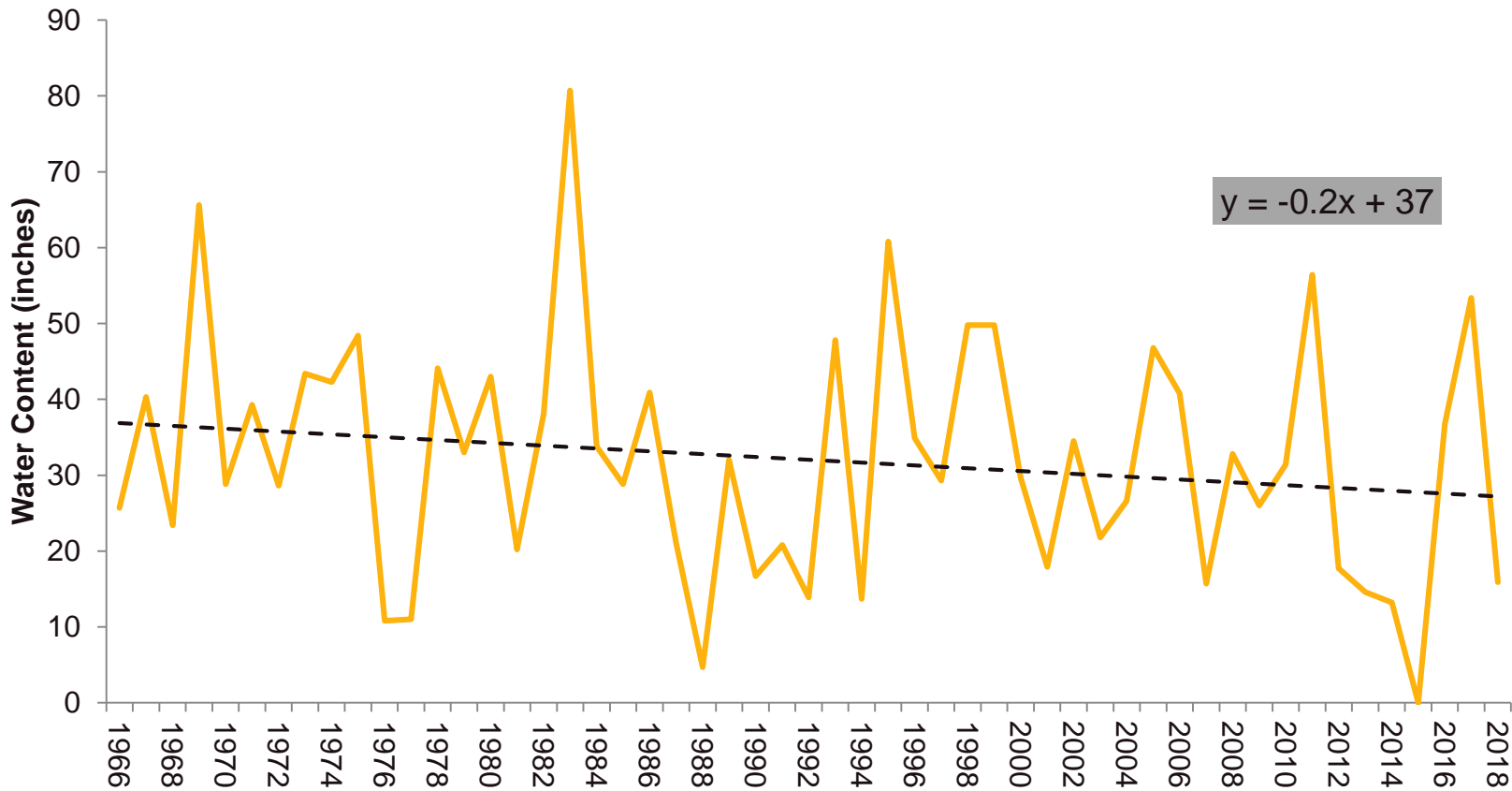


Precipitation has increased by 0.1"/year



April 1 snowpack has decreased 0.2"/year

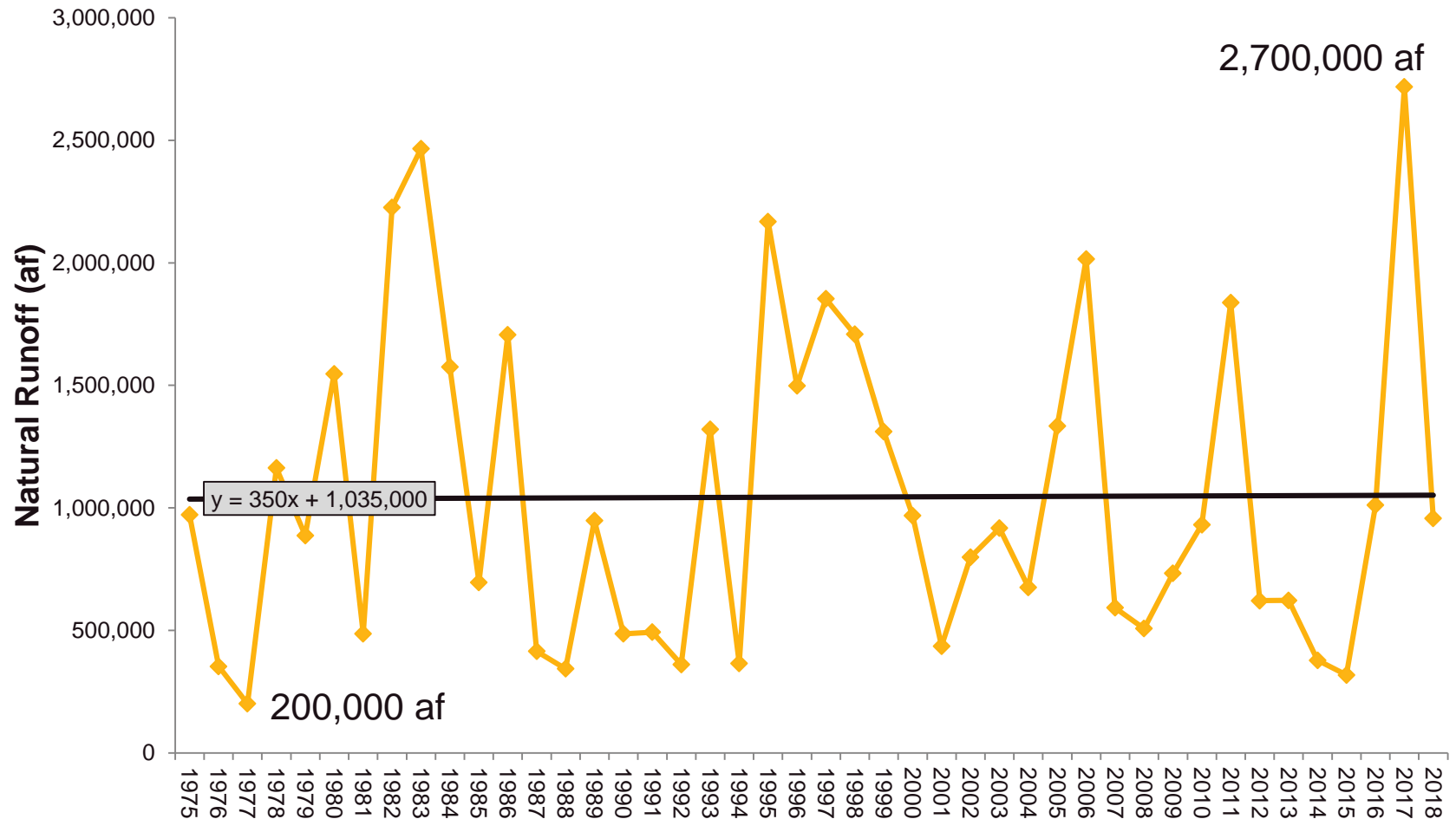
April 1 Snowpack



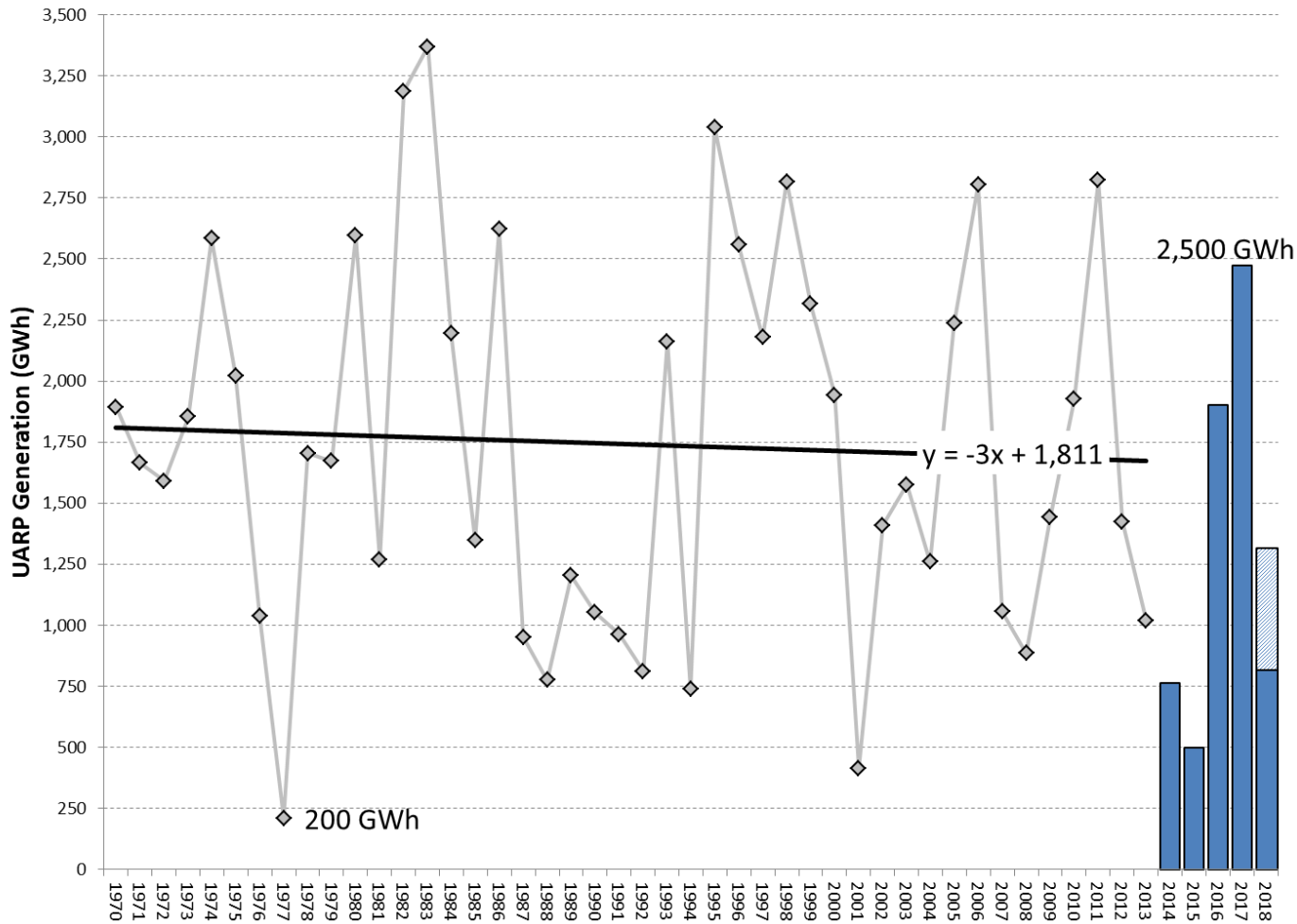
How is the impact from more precipitation falling as rain minimized?

- ET&C has an established planning procedure to develop the water release strategy.
- The modeling procedure includes 59 different runoff scenarios.
- The range of the runoff scenarios captures the lower snowpack trend.

Managing the variable runoff uncertainty, not precipitation trends, is the biggest challenge.



Runoff variability is a significant business driver

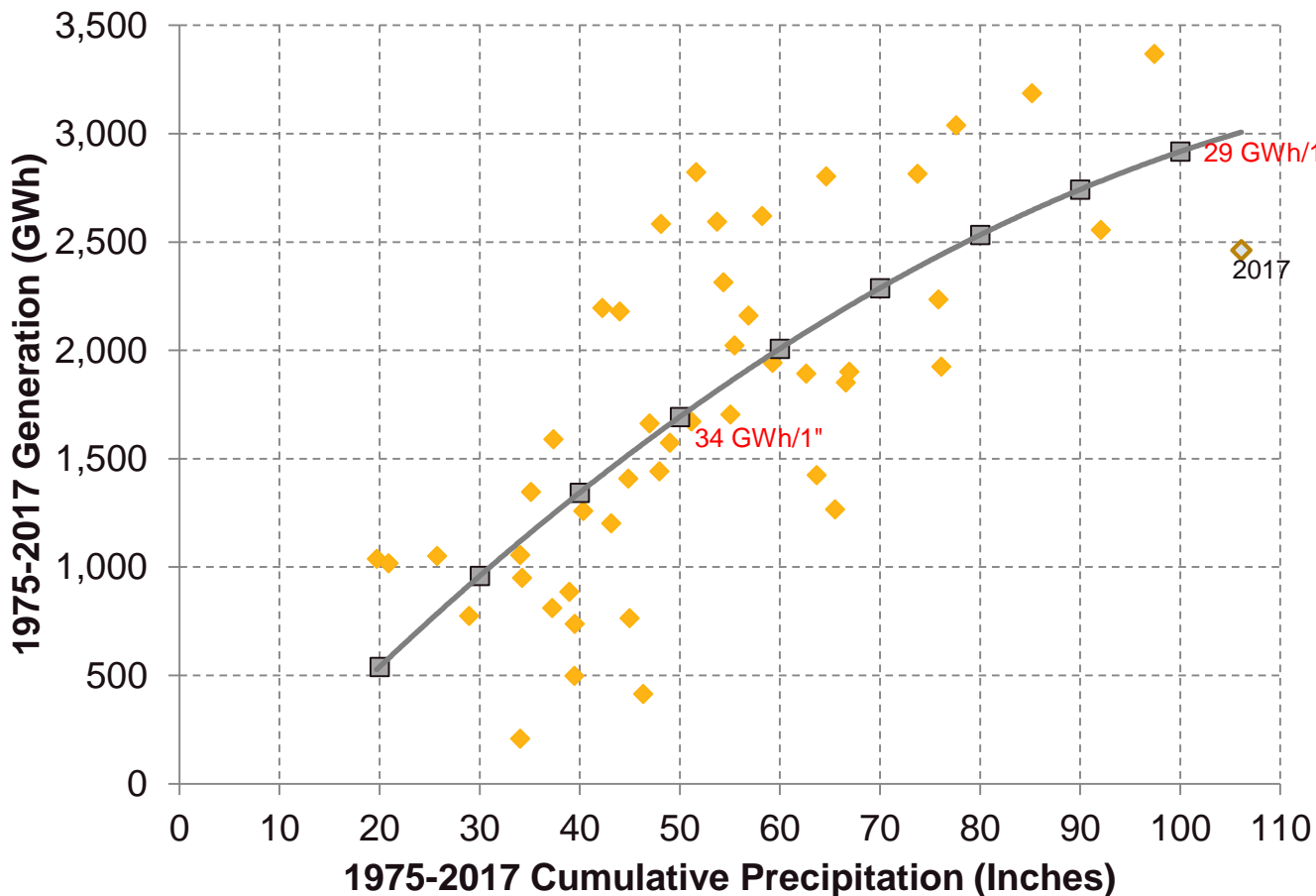


- The UARP meets 2% to 30% of SMUD's customer energy need
- Value = \$7.5 to \$75 million

Questions



More water is typically spilled when precipitation increase.



Financial Impact in 2017 given 106" of precipitation @ \$30/MWh =
 $3,600 - 2,900 \text{ GWh} = 700 \text{ GWh} * \$30/\text{MWh} = \$21 \text{ Million}$

At median precipitation, each inch of rainfall converts to 34 GWh of energy, while at 100", each inch of rainfall converts to 29 GWh of energy. Part of this difference is due to higher spill volumes.