



# Why Your Supercomputing Center Pays More for Water Than It Should — and How to Fix It

Water Flow Innovations LLC

Flow Conditioning Device (FCD)  
waterflowinnovations.com

Your cooling towers, chillers, and liquid cooling loops run 24 hours a day — but your meter counts more than actually arrives. **Cooling tower makeup, chiller demand variation, and liquid cooling replenishment create the conditions for air, gas, and turbulence to form in the line at your meter — and you're billed for it.** The FCD (Flow Conditioning Device) corrects the measurement. Compute performance and every cooling system stay the same. Your water bill drops — and so does your sewer bill, because sewer charges are calculated from the same inflated meter reading. One device. Two bills fixed.

## WHY HPC FACILITY WATER METERS OVER-READ

### The Core Problem: HPC Cooling Systems Run the Highest Sustained Water Demand of Any Commercial Facility Type

Supercomputing centers run cooling towers, chiller plants, and liquid cooling loops simultaneously from the same municipal meter around the clock. Each demand variation generates air, gas, and turbulence in the line at the meter. Your WUE tracks compute efficiency accurately. Your municipal bill does not track actual water use accurately. The FCD corrects that without changing any cooling setpoint.

## THE THREE OVER-READING SOURCES UNIQUE TO HPC & SUPERCOMPUTING CENTERS



### Cooling Tower Makeup Cycling

Cooling tower makeup water cycling with compute load creates continuous variable demand events — the most sustained meter over-reading source in any HPC facility, running every hour of every day.



### Chiller Plant Demand Variation

Chiller plant load variation with HPC job mix creates high-velocity demand changes at the supply meter — generating air, gas, and turbulence on every significant compute load transition.



### Liquid Cooling Loop Replenishment

Direct liquid cooling loop makeup and blowdown cycling creates variable demand events — adding a third compounding over-reading source on top of cooling tower and chiller demand.



### Your WUE Score Is Better Than Your Meter Shows — and It Matters for DOE and NSF Reporting

WUE is calculated from metered municipal intake per compute unit. When the meter over-reads, your reported WUE is worse than actual performance. After FCD installation, metered intake reflects true use — improving the accuracy of WUE for DOE ASCR grants, NSF ACCESS allocations, and Green500 or TOP500 sustainability disclosure.

## BEFORE & AFTER THE FCD

### WITHOUT FCD

- ✗ Air, gas & turbulence billed as water volume
- ✗ Cooling tower cycling inflates meter all day
- ✗ Chiller variation compounds over-reading
- ✗ WUE score worse than actual performance
- ✗ Sewer charge tied to inflated meter



### WITH FCD INSTALLED

- ✓ Metered volume reflects water actually delivered
- ✓ Cooling tower makeup reads accurately
- ✓ Chiller demand measured correctly
- ✓ WUE score reflects true performance
- ✓ Sewer charge based on real usage

5–30%

Average water & sewer bill reduction

46%

Highest documented single-site reduction

~1 Hour

Install time — water off about 1 hour

6-Mo

Money-back, no questions asked · install non-refundable

### How the FCD Works — Four Steps

1

Installs between two pipe joints right after your water meter — water off about one hour

2

Creates a slight back-pressure that extends back through the meter, reducing air, gas, and turbulence

3

Delivers a laminar-like flow profile through the meter — the condition it was calibrated to read

4

Meter reads accurately. Bill drops. Cooling tower setpoints, chiller parameters, and every compute system are effectively unchanged.

### FREE SAVINGS ESTIMATE

Instant estimate — takes 30 seconds, no contact info required.

[waterflowinnovations.com/](https://waterflowinnovations.com/)  
[water-bill-savings-calculator](#)

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### CERTIFICATIONS

IAPMO NSF/ANSI/CAN 61 KIWA GMP SQF

316L Stainless Steel · Made in USA  
Under 0.8 psi pressure loss  
Lifetime Transferable Warranty