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Water savings using liquid cooling for data centers.

Additional submitted attachment is included below.

According to a recent WSJ article, "Data Centers and Hidden Water Use" (6-24-2015) Data centers in California use "roughly as much water in a year as 158,000 Olympic sized swimming pools" Assuming 2 acre feet per swimming pool, this is 316,000 acre-feet of water. This water is consumed in cooling towers used in conjunction with chilled water systems. Direct to chip liquid cooling systems can save 30% or more on data center energy consumption and thereby reduce cooling tower water usage by a similar fraction, or even more if the cooling tower is run to minimize water usage instead of water temperature. Computer CPUs and GPUs can be cooled by water as warm as 55C, allowing for the use of dry coolers(or dry coolers with part time evaporative cooling), reducing the water consumption of data centers substantially.

Indeed, the CEC has proposed to fund a 1.8 MW demonstration system by one vendor under the EPIC program. "Demonstration of low-cost data center liquid cooling with 12-month payback"

The question is, is CEC planning to fund other low cost liquid cooled data center demonstrations?

Low cost liquid cooling for enterprise data centers (as opposed to high performance computing) is still in its infancy.

The enterprise application requires very low cost to penetrate into areas with low density racks and low cost electricity. CEC funding of multiple demonstration projects would allow for complete analysis of savings and costs for parts, installation, service etc.

If efficient liquid cooling were widely adopted, then it could save the state and the world a significant amount of water and energy.

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