Sacramento
Municipal Utility District (SMUD)

Year	2013
Client	Sacramento Municipal Utility District (SMUD)
Project Location	Sacramento, California
Building Size	~51 acres (6 buildings incl. 200-person office)
Contract Size	$ 15,000,000 USD
Project Size	$ 112,000,000 USD
System Size	1.1 MW PV; District Thermal; Heat Pumps

Who We Are

ThermaStor Solutions Inc. ("TSS") is a specialized engineering firm advancing geoexchange and energy storage, delivering superior building lifecycle performance while supporting ambitious environmental targets.

Our patented low-clearance drill rig enables geothermal retrofits even in constrained urban sites such as underground parking garages, unlocking decarbonization opportunities for both new construction and existing buildings. By integrating advanced hot and cold underground long-duration thermal storage (LDES) with base-building design conditions, we create unique HVAC demand management strategies that can reduce cooling-related electrical demand by up to 80% during peak hours and shift thermal production to higher-efficiency off-peak periods. This innovative approach provides a compelling financial case while ensuring grid-friendly, resilient, and scalable decarbonization solutions.

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As California's largest publicly owned utility, SMUD set a precedent in sustainable infrastructure by targeting net-zero energy performance at its new East Campus Operations Center. The six-building campus includes a 200-person office building, warehouse, and maintenance facilities – all interconnected through a local district thermal network.

ThermaStor team members (with previous firm) served as lead sustainability and mechanical engineers for the project, supporting the development of advanced heating and cooling strategies to minimize energy consumption across all six facilities. The team designed and optimized a centralized ground-source heat pump network, distributing thermal energy across buildings with diverse load profiles.

A 1.1 MW solar photovoltaic farm and thermal energy network was engineered to meet the full annual energy demand of the site. The integration of high-efficiency thermal systems with this onsite renewable generation enabled the project to achieve net-zero site energy while reducing the levelized cost of electricity below prevailing utility rates, a rare and notable outcome for a public-sector campus at the time.

Lessons Learned

The success of advanced energy systems hinges not only on good design but also on proper implementation. In this case, direct involvement in the commissioning process proved critical. Mr. Bererton's on-site participation in a one-day session with the Cx Authority and project team resolved all outstanding control sequence issues ensuring the system has continued to operate per original design expectations years after completion.

This project remains a model for municipal decarbonization and high-performance public infrastructure.